

# Northampton Transportation Plan



Pioneer Valley Planning Commission  
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# **Municipal Transportation Plan For the City of Northampton**

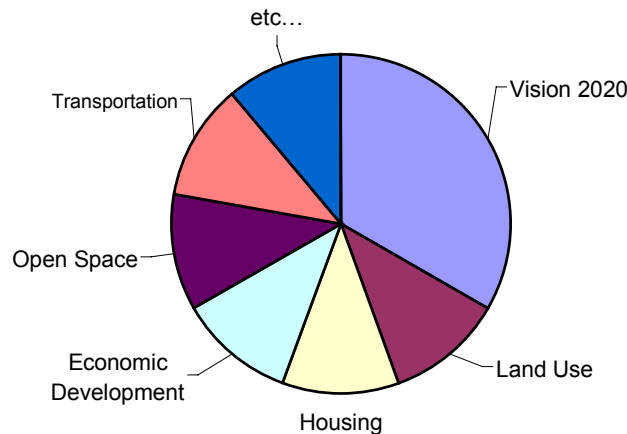
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## PREFACE

The city of Northampton is generally considered a very livable community by both residents and visitors alike. A thriving downtown, intact neighborhoods and a significant amount of green space combine to create a very comfortable environment. Northampton's livability did not happen by accident. For the last 30 years city officials and dedicated residents have worked together to make Northampton a wonderful place to live, learn, work and play. A key ingredient in this effort is planning. While the city of Northampton has not completed its comprehensive plan, it does have a visioning document and a series of plans to achieve that vision. This document, Northampton's Transportation Plan, is one element of the comprehensive plan.



The purpose of planning is to increase your chance of being successful at whatever it is that you are trying to do. A common problem in municipal planning is forgetting to articulate a goal for the planning process—other than, create a plan. If your goal is to “make a plan”, and the purpose of planning is to enhance your chance of being successful at accomplishing your goal, then you’re spinning your wheels. Communities must have a reason other than “making a plan” to undertake a planning process.

The Pioneer Valley Planning Commission (PVPC) received a request from the City of Northampton in the spring of 2000 to conduct a municipal transportation planning process for the community. The concept of this plan evolved from the work performed by the Mayor’s Task Force on Safer Streets that was

formed to identify measures to improve transportation safety in the City.

The Pioneer Valley Planning Commission would like to acknowledge the participation of the members of the Northampton Transportation Committee whose input and comments were vital to the completion of this effort.

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# 1.

## Executive Summary

There are a number of actions the city of Northampton can take to achieve its goal of a safe, balanced transportation system. Recommended actions range from the bureaucratic—institutionalize the consideration of transportation concerns within the city government via a standing committee (and staff if funds allow), to the innovative—citizen-based street reclaiming. The transportation committee and its consultant, PVPC arrived at these recommendations through a combination of data analysis and review of past planning efforts.

The top recommendations that emerged from the review of past plans are:

- institutionalization of transportation issues within city government
- creation of a traffic calming program—which includes a citizen action component
- expanded bicycle facilities—including routes, paths, lanes and parking facilities
- expanded pedestrian facilities—including sidewalks, signs, crosswalks, curb bulbs and refuges
- expanded transit service
- enhanced traffic safety public education
- expanded enforcement of traffic laws and
- improved zoning and other city policies to facilitate the above ideas

The top recommendations that emerged from the data analysis are:

- Develop an annual traffic counting program
- Improve safety at dangerous intersections
- Periodically re-time traffic signals
- Conform with the latest version of the Manual on Uniform Traffic Control Devices (MUTCD)
- Consider an in-house pavement management system

- Conduct a sign inventory
- Improve traffic crash data collection and reporting
- Launch a comprehensive traffic education campaign
- Develop a DPW web-site
- Enhance bicycle facilities
- Adopt a policy for consistent crosswalk designation
- Conduct a sidewalk inventory
- Improve transit—pending results of transit survey

As can be seen, many of these recommendations overlap. In the **Recommendations Section** you will find detail on these recommendations. In the **Policy Section**, you will find DRAFT policies to guide implementation of the Plan, as well as a list of relevant action steps. Some of the action items have been acted upon as part of this planning process—drafts are included in the **Products Section**. Other recommendations and proposed action steps will require additional time and money. The **Implementation Section** presents plans for acting upon all the recommendations included in this plan.

This plan is understood to be a work in progress. It includes proposed mechanisms for institutionalizing transportation concerns into Northampton's municipal government, as well as numerous other proposals designed to enhance both the safety and the efficiency of Northampton's transportation system. The transportation committee plans to refer the adoption of all proposals included in this plan to the appropriate city government entity for adoption in a timely fashion.

The Northampton Transportation Committee unanimously endorsed this plan on December 10, 2001. The Northampton Planning Board had concerns regarding the plan, particularly on the issues of parking and maintaining a vibrant downtown economy. After much discussion, the Planning Board agreed to endorse the Plan with the understanding that more information is required to fully develop the Transportation Component of the Northampton Master Plan. It will be the responsibility of the Permanent Transportation Committee to work with the Northampton Planning Board to address any outstanding issues and complete the Transportation Component of the Northampton Master Plan.



# 2.

## Goals

The city of Northampton has a well-respected record of success with planning projects. The purpose of this transportation plan is clear. The transportation plan will be a road map to achieve the vision of transportation articulated in Vision 2020 and in the Mayor's Task Force on Safer Streets final report:

*"Many of us (Northampton residents) depend on and love our automobiles. At the same time, many of us identify car and truck traffic as the biggest factor eroding our quality of life. Throughout the city, in rich and poor neighborhoods, speeding car and truck traffic frightens us and forces us back into our homes and off the streets. We want our traffic laws obeyed. We also want our city engineered in such a manner that vehicles must slow down while driving through Northampton. More than forcing vehicles to slow down, though, we want this city to become more friendly to those using alternative forms of transportation. We want safe and direct walking paths, lanes that allow bicycle commuting and short cuts that allow people on foot or bicycle to get places directly. We do not see this issue as one of ancillary importance, rather one of paramount concern."*

Vision 2020

The city of Northampton wants a well-planned, safe and balanced transportation system. To realize such a goal, planners, activists and volunteers must consider the environmental, health and economic benefits and liabilities of numerous actions. The need for change is evident.

Both residents and officials would like to increase safety in the city for pedestrians, bicyclists, and motorists. Safety concerns are documented in police crash reports and in a recent study completed by the Hampshire County Safe Roads program in which the City was ranked as the most dangerous community in Hampshire County based on traffic crashes per population. In addition to enhancing safety, residents want a balanced transportation system—one that supports all forms of transportation: walking, bicycling, transit and personal motor

vehicles, and in so doing reduces pollution and makes the most of limited financial resources.

Northampton has recently joined the Cities for Climate Protection (CCP) program to develop local initiatives to reduce greenhouse gas emissions. Transportation sources account for a significant portion of the city's CO<sub>2</sub> emissions, and asthma rates, which are linked to air pollution, have also increased dramatically in recent years. The recommendations of the Northampton Transportation Plan should compliment and support the Local Action Plan developed as part of Northampton's CCP program.

# 3.

## Process

Because the city had already completed a goal-setting process (Vision 2020) and a concentrated effort to identify pressing transportation concerns (Mayor's Task Force on Safer Streets); the conventional planning process of data collection and analysis to identify problems was not necessary in this planning effort. Instead, the consultant, the Pioneer Valley Planning Commission (PVPC) collected and analyzed data to document and refine people's existing understanding of already identified problems.

A conventional planning process follows four steps:

- Goal setting
- Data collection
- Data analysis
- Strategy formulation to address identified problems

The Mayor's Task Force on Safer Streets and the Office of Planning and Development and residents who participated in Vision 2020 had already set goals and elaborated strategies to achieve those goals. They had even completed some preliminary data collection and analysis. As a result, this planning process was somewhat unconventional. Because the city had a good idea of many possible ways to achieve its vision of a safe balanced transportation system, PVPC decided to conduct data collection and analysis as a best management practices comparison and to better understand identified problem areas.

The city of Northampton already does a lot to ensure livability, including promoting a safe balanced transportation system—now residents, elected officials and city staff want to do more. It is worthwhile to document all that is being done, to describe existing problems as precisely as possible and to summarize what comparable places have done to achieve similar goals. In the course of doing this—gaps in information available to understand problems will be identified. As the city moves to act

on its transportation problems, some actions will be designed to address problems, while other recommendations will be geared toward better understanding existing problems. The process of working to realize the city's vision of a safe balanced transportation system will be ongoing. The people responsible have to weigh identified needs against existing resources to address those needs all the while considering the depth and clarity of their understanding of both the resources and the needs.

As the Mayor's Task Force on Safer Streets report documented, the main barrier facing the city in achieving its goal of a safe, balanced transportation system is lack of coordination between the numerous departments responsible for transportation concerns and finite financial resources. All the city departments that have responsibility for transportation concerns are doing a good job—but there is some redundancy and missed opportunities because of the lack of coordination. There is also a sense, on the part of residents as expressed to their representatives on the city council—that people do not know to whom they should address transportation issues.

According to city staff, elected officials, and existing policies and procedures, if the city had unlimited financial resources, then residents' transportation vision could be realized. The Department of Public Works (DPW) would build sidewalks and pedestrian paths everywhere so people could walk. The DPW and the Office of Planning and Development would construct all the planned bike routes and paths thereby creating the physical infrastructure necessary to facilitate alternative transportation, and the Police Department would assign staff to enforce traffic laws throughout the city. Other than the lack of coordination, there do not seem to be any institutional, regulatory, or bureaucratic barriers to achieving the city's transportation vision. The city simply does not have all the money it needs to do all the work necessary, and lacking a mechanism for inter-departmental communication as well as a central focus for residents' ideas and concerns, city staff and transportation committee volunteers struggle with questions of where to invest limited resources to best enhance safety and efficiency for all road users. They could do this much more effectively with a standing transportation committee.

### 3.1 Goal Setting:

As stated, the goal of this plan was previously articulated by participants in the Vision 2020 planning process and by the members of the Mayor's Task Force on Safer Streets. The members of the transportation committee affirmed these goals at the start of this planning process.

### 3.2 Data Collection:

PVPC collected a significant amount of data. It is summarized in the "Existing Conditions" section of this plan. Data was collected on the following aspects of the community:

- transportation physical infrastructure—roads, sidewalks, bike lanes and routes, and transit availability and
- political infrastructure: city policies, rules and regulations
- status/use of the infrastructure: volume, crash data, level of service, capacity, and maintenance level

As mentioned, there are two purposes to data collection: 1) to identify problems and areas of concern, and 2) to identify gaps in data. Given the inexact nature of planning combined with the messy fact of real life, one can never exactly understand real-world problems. There is always going to be "one more piece of information" that would seem to clarify an issue. Planners have developed methods to deal with the limitations of data collection. We recognize that we will never exactly understand all the factors contributing to a given problem and we accept that our data and our data collection methods are sometimes flawed. Certainly there are some instances where it is worthwhile to invest one's limited resources in enhancing data collection, but this is not always worthwhile.

#### Case Study: Limitations of Data

*Police officers and other highway safety experts rely on traffic accident report data to understand community's highway safety problems. However, everyone involved with highway safety knows that the data collected and reported from traffic accident sites is flawed. It is flawed in many ways: 1) reporting threshold: the registry of motor vehicles only requires police officers to complete accident report forms for crashes that either include personal injury or that have property damage of \$1,000 or more. This means that when one is collecting data on the number of car crashes at a particular location, one will only learn about the crashes that resulted in personal injury or property damage of \$1,000 or more. And yet, some injuries are not obvious to the naked eye. Some police departments collect crash data on all incidents to which officers respond—this means that a local police department may have*

*different crash numbers than the registry; 2) location: many roads have more than one name, i.e. Main street is Route 9, King street is Route 5. If one checks for crashes on Route 5 without including King Street, then one may under-report crashes. 3) timeliness: the registry of motor vehicles summarizes crash data reported to it from local police departments, but often there is a 1-3 year lag between the event and the availability of the summary data.*

### **3.3 Data Analysis:**

Data collected was analyzed with respect to best management practices and in comparison with existing policies, rules and regulations. Data was analyzed to better understand existing problems and to identify any unidentified areas of concern.

### **3.4 Strategy Formulation:**

As mentioned, the Vision 2020 process combined with the work of the Mayor's Task Force on Safer Streets yielded a plethora of possible strategies to achieve Northampton's vision of a safe balanced transportation system. Given this, the Transportation Plan committee and PVPC worked to sort and rank these strategies from 156 possibilities to 57 top-ranked ideas to 17 key recommendations. See the recommendations section and the appendix for detail on the sorting and ranking process.

### **3.5 Public Involvement**

Public participation is a key component of any transportation planning process. Prior to the development of the Northampton Transportation Plan, the city established a Transportation Committee to oversee the plan. Comprised of city councilors, local staff, and concerned citizens, the Northampton Transportation Committee met on an average of once every three weeks to assist in the development of the plan.

The Draft Northampton Transportation Plan was presented to the Northampton City Council on September 20, 2001. This meeting was also televised on the local cable access channel. In addition, two public forums were held to present the Draft Plan to the public and allow the opportunity for public comments. Copies of the Draft Plan were also available for public review at the Forbes and Lilly Libraries, the Office of Planning and Development, the Pioneer Valley Planning Commission, and online at [www.northamptonplanning.org](http://www.northamptonplanning.org).

<b>Date</b>	<b>Location</b>	<b>Time</b>
October 3, 2001	Smith Vocational School Cafeteria	6:30 PM – 9:00 PM
October 17, 2001	Unitarian Church Basement – 220 Main Street	6:30 PM – 9:00 PM

Seventy people attended the two public comment sessions. While this number is relatively low, the consistency of comments received suggested that the draft Plan successfully reflected the needs and concerns of the residents of Northampton, and presented solutions residents would support.

At each session PVPC staff presented an overview of both the planning process and the information collected in the course of the plan. The City Planning staff explained the ‘three E’ approach to transportation planning and infrastructure development. Participants were encouraged to ask questions and comment throughout the presentations. During the second half of the public participation forums participants were divided into small groups and asked to both comment on the plans proposals and suggest their own solutions using the ‘three E’ framework.

Traffic-related information in the schools, neighborhood-based speed enforcement, and physical changes to the roads, including traffic calming, emerged as the top issues/solutions to transportation concerns in Northampton. Participants endorsed the need for a transportation entity within City government, and expressed concern for, and solutions to address, the needs of alternative road users: pedestrians, bicyclists and transit users. Comments are summarized in the Appendix.





# 4.

## Recommendations

The “three E” framework of understanding transportation issues and concerns: engineering, education and enforcement, is well established within the world of transportation professionals. You need a safe space to move, enforcement of the ‘rules of the road’ and you need to educate people how to use the space and operate the vehicles (including bicycles) they use. Borrowing from epidemiologists, some transportation planners have elaborated on this framework to clarify the target of the different transportation countermeasures available. There are three possible targets for transportation countermeasures: the environment (both physical and legislative), the vehicle (or pedestrian) and the operator of the vehicle.

The city of Northampton will need to implement a variety of actions to achieve its goal of a safe and balanced transportation system, combining the three “E’s” with the three possible targets: engineering, education and enforcement aimed at the environment, the vehicle and the human being. It is important to keep in mind the dual focus of this transportation plan. Northampton residents want both a safe and a balanced transportation system. Planners and implementers must think of the needs of road (and sidewalk) users—bus riders, bicyclists, pedestrians, as well as vehicle operators and passengers. Interstate highways are statistically speaking, the safest roads on which to travel, but they do not accommodate anything other than motor vehicles and they certainly do not contribute to community quality of life. It is harder to plan for multiple users, but certainly not impossible.

Given the challenges posed by Northampton residents desires, the first and foremost recommendation of this plan is the institutionalization of transportation concerns within the city government via a standing committee (and staff if funds allow). Residents, city councilors, staff, and concerned others need a place to which they can bring their transportation-related

concerns—be they ones of safety, i.e. people are speeding through my neighborhood, or questions of access, equity, and/or efficiency, i.e. “I can’t get to my workplace without driving a car,” “There is no safe place for me to ride my bike.”

The city of Northampton needs to make a visible and permanent commitment to creating and maintaining a safe and balanced transportation system for ALL residents. Using this approach, the following sections describe the recommendations included in this plan to support these goals.

## **4.1 Process – Review of Past Plans**

Members of the transportation committee reviewed all transportation-related recommendations included in Vision 2020, Fall 1999 and the Mayor’s Task Force on Safer Streets Final report, Spring 2000 and ranked them based on five criteria:

- enhances safety
- improves multi-modalism
- enhances accessibility
- promotes smooth circulation
- enhances livability

These five criteria represent the values the city of Northampton has with respect to its transportation system.

Out of an initial list of 156 recommendations, 57 emerged as top priorities. These 57 recommendations were sorted into eight categories:

- organizational
- zoning/regulatory
- education
- engineering
- enforcement
- bicycle
- transit
- pedestrian-related

Finally the recommendations were condensed into the 17 suggestions listed below.

- Create a Model for responding to citizen and other concerns.
- Elaborate a city policy on the use, implementation and maintenance of bicycle and pedestrian facilities.
- Develop a model sidewalk ordinance/policy.
- Develop model pedestrian, bicycle, and transit-friendly zoning tools.
- Develop a model traffic safety education programs for use by the Police department, the schools and neighborhood groups.
- Develop traffic calming education programs.
- Develop a model speed reduction program.
- Develop a combined city and resident traffic calming program.
- Develop a signing plan for the city.
- Conduct an intersection level of service (LOS) analysis to refine knowledge of identified problem areas.
- Conduct a downtown traffic study to better understand pedestrian, bicycle, motor vehicle conflict areas.
- Develop and implement a bike lane/route plan.
- Conduct a Bicycle level of service analysis and use it to guide bicycle-related infrastructure improvements.
- Conduct a Bike locker feasibility study.
- Expand transit access.
- Conduct a sidewalk inventory to identify and prioritize where additional sidewalks are needed and identify maintenance needs.
- Conduct an engineering study to assure appropriate and adequate “walk” time at signalized intersections.

## 4.2 Process – Data Analysis

Section 3 of this document presents a summary of the existing transportation conditions in the city. This information was based on data available from a variety of sources including previous transportation studies, historical traffic count data, GIS coverage, crash data, land use and zoning regulations, and bicycle and pedestrian data. This data was critical in identifying the existing transportation deficiencies in the city.

## 4.3 Detailed Recommendations

### a. Organizational

The city of Northampton is exemplary when it comes to many aspects of transportation planning and implementation. The city has relatively up-to-date ordinances that promote and encourage a pedestrian and transit friendly environment. Planners understand the link between transportation and land use, and are consciously working to minimize the negative effects of the transportation infrastructure on residents' quality of life. Motorists generally yield to pedestrians in crosswalks, a phenomenon all too rare in most communities. The DPW has quite an extensive road building and maintenance program as well as a number of innovative bicycle-friendly initiatives, including recent installation of numerous bike parking racks around town as well as a newly striped bike lane on Route 9. The Police Department is well thought of and known throughout the Commonwealth for its progressive traffic safety initiatives. Even so—there are clearly steps the city can take, at an organizational level, to improve transportation in the city.

It is recommended that the city create and publicize a process through which residents can express their transportation-related ideas and concerns. The transportation committee charged with developing this plan should be morphed into a permanent entity within city government, and, if funds allow, city staff should be assigned to support the work of the committee.

This entity should facilitate the adoption of city policies on bicycle and pedestrian infrastructure using models developed as part of this planning process.

#### PRODUCTS:

- ➔ format of Transportation Committee
- ➔ proposed process

### b. Zoning and Subdivision Regulations

The city has relatively up-to-date zoning ordinances and subdivision regulations that promote and enhance Northampton's

livability. Nevertheless, the Office of Planning and Development could facilitate an even safer and more balanced transportation system that is even more pedestrian, bicycle and transit friendly environment with updated zoning ordinances and subdivision regulations. This plan includes model ordinances on sidewalks, bicycle parking, and combating sprawl via an “adequate facilities ordinance”.

**PRODUCTS:**

- sidewalk ordinance
- bike parking ordinance
- adequate facilities ordinance
- transit-oriented development ordinance

**c. Education**

Transportation problems, both those of personal safety, as well as problems of air pollution, land use and declining quality of life, can be caused and affected by three things: the environment, the vehicle, and the human being operating the vehicle. In terms of safety issues, immense progress has been made in the last 75 years with respect to the environment—both physical and regulatory, and to vehicles. Roads and sidewalks are smooth, and clear of visual obstructions, laws regulate how vehicles interact, automobiles and trucks have anti-lock brakes, air bags, seat belts, motorcyclists must wear helmets, bicyclists are encouraged to do so, and pedestrians have to cross in crosswalks.

And yet—transportation safety problems persist. Why? Because people still make mistakes. Approximately 85% of all crashes are caused by human error. Recognizing this, the city needs a comprehensive public information and education program designed to educate residents about how to share the road, respect neighborhoods as places where people live, and obey traffic laws. Residents should also be involved in all comprehensive traffic calming efforts. Research shows that simply changing the physical environment and/or increasing enforcement of traffic laws does not yield the same beneficial effects without resident involvement.

The city should also make a special effort to keep municipal staff educated about and informed of all the latest innovations in transportation planning and safety. Residents need to be educated to use the system safely and efficiently, and the

people who design, build and maintain the transportation system also need to be educated.

Just as the city needs to make a special effort to educate residents and professionals to use and design a safe transportation system, so can the city educate and encourage residents toward a balanced transportation system. The city is a member of the Route 9 Transportation Management Association (TMA). As such city staff are being educated about and encouraged to use alternative modes of transportation to improve air quality in the Valley. The city has led the region two years in a row with its organization for and participation in the Pioneer Valley Bike Commute Week. But even so, only a very small percentage of city residents regularly use alternative modes of transportation. The city can educate residents about alternative modes of transportation, just as it educates residents about transportation safety. There are many resources available, including the Northeast Sustainable Energy Associations' "Getting around without gasoline", Bike Commute week and the American Lung Association's "Ride share for clean air".

### **Educational Pamphlets**

Each year, the city receives many requests to reduce speed limits, install four-way stop signs or traffic signals, and improve safety at various locations. The city should consider developing an information sharing program. Public understanding of the intent of city and state laws as well as the function of traffic control devices is critical in improving compliance and balancing transportation modes and safety.

One method to distribute additional information to residents is by providing free educational pamphlets. These pamphlets could provide information on local and state laws, safety tips, and sources for additional information on a variety of transportation issues. The pamphlets strengthen the cities current transportation policies, but continue to allow citizens a chance to participate in developing practical improvements for their neighborhood.

Examples of potential educational pamphlets include:

- Bicycles and vehicles sharing the road
- How Pedestrian Signals Work

- Installation Policies for Traffic Signals and Stop Signs
- Speed Limits
- Neighborhood Traffic Safety

In addition, public information could be disseminated via the city's public access television station and website.

#### DPW Website

The Northampton Department of Public Works should consider enhancing their website to distribute information similar to the site currently maintained by the Office of Planning and Development. This site could assist the DPW in distributing information to the public on the services provided by the DPW, current and future construction project schedules, and report problems such as potholes. In the future, this website could serve as a method to educate residents on procedures for establishing speed limits, installing traffic signals, and implementing traffic calming measures, etc.

#### PRODUCTS:

➔model education program

#### **d. Enforcement**

In the three-pronged approach to transportation planning, design and system maintenance, enforcement plays a key role. As mentioned above, changing the transportation environment—both physically (roads, signs, pavement marking, sidewalks, etc.) and legislatively (helmet laws, speed limits, sign ordinances, etc.) has dramatically improved both the safety and the efficiency of transportation systems. But one must enforce regulations to make them work. The Northampton Police Department has had considerable success applying for and receiving grants from the Governor's Highway Safety Bureau (GHSB), and other sources to run special enforcement programs, especially for efforts to enhance pedestrian safety. The Police Department should continue to apply for these and any other funds available for overtime enforcement and for special traffic enforcement efforts. The Police Department should also be actively involved in the city's comprehensive traffic calming program.

### Availability of Crash Data

The city of Northampton Police Department, in cooperation with the Transportation Committee should advance measures to improve the consistency of existing crash reporting methods. Currently, crashes can be under-reported due to inconsistencies in reporting the location of the crash. For example a crash at the intersection of Main Street with Pleasant Street could also be reported as a crash at Main Street with King Street or Route 9 at Route 5.

The Massachusetts Highway Department (MassHighway) is in the process of implementing a new system to collect and analyze crash data submitted by communities. Currently, all crashes involving a personal injury or more than \$1000.00 in damage must be reported by the community to the Registry of Motor Vehicles. Through a combination of improved reporting methods and the validation of all crash locations, it is hoped that great improvements can be made in the accuracy of the information available from MassHighway.

### Citations

The Transportation Committee felt that information on the type of citation issued for a crash would be helpful in assessing the cause of many crashes. Based on the information collected by PVPC to prepare the collision diagrams for the top crash locations, citations were not reported for most crashes. It is likely that many crashes did not require a police officer at the scene, however, efforts should be improved to document all citations issued at crashes in the city.

### Top Crash Locations

The city of Northampton Police Department, in cooperation with the Transportation Committee should advance measures to develop a prioritization system to rank the top crash locations for each calendar year. This prioritization system should consist of a point system based on criteria establish by the city. For example, a property damage only crash may receive 1 point, while a vehicle injury crash may receive 5 points. In the short term, this role should be handled by the Transportation Committee, however the state could provide



this information in the future as the new MassHighway system continues to advance and improve.

Collision Diagrams should be developed for the top crash locations in the city. Collision diagrams plot each crash on a map and can assist in identifying problems and trends that contribute to crashes.

#### **e. Engineering**

As discussed, changes to the physical environment in which vehicles and pedestrian interact are an important way of enhancing transportation safety and efficiency. A key recommendation of this plan is that the city create a Traffic Calming program—including an educational and enforcement component. Traffic Calming is a transportation innovation brought to the United States from the Netherlands. The goal is quite literally to “calm traffic”—that is slow it down. Small-scale engineering changes (such as mini roundabouts, curb bulbs, and raised crosswalks) are built in neighborhoods to physically slow traffic down. In addition to a Traffic Calming program, the city should analyze and possibly improve intersections, the flow of traffic downtown, and access to the state hospital.

##### **PRODUCTS:**

➔model traffic calming program

##### **Monitor Daily Traffic Volumes**

Traffic volumes should be monitored periodically to determine changes in travel patterns as a result of growth in the city. The PVPC prepared a historical matrix of traffic volume data available for the city. This information should be incorporated into the local GIS database and a map of all traffic count locations developed. It is recommended that the Transportation Committee develop an annual traffic counting program to continue to add traffic count information to the existing database and collect regular information at key locations throughout the city.

A simple traffic counting program can be conducted in conjunction with the PVPC. The PVPC has an annual traffic counting program and performs a variety of counts in the city

of Northampton each year for the Massachusetts Highway Department. In addition, PVPC will perform two free traffic counts per year upon written request from the Mayor. Additional counts are conducted at PVPC's cost.

In order to develop a more-intensive traffic counting program, the city of Northampton should consider purchasing additional traffic counting equipment for use by local staff. The Police Department and the DPW have counters, as does the town of Amherst. An additional starter package (which includes four counters and software) can be purchased for approximately \$4,500. Staffing such a unit would require a part-time commitment of city staff time, but it would allow the city to collect traffic information more quickly and efficiently. Alternatively, some municipalities have had success with volunteer use of traffic counters. Having volunteers staff a traffic counter necessitates staff oversight and may involve complicated liability issues.

#### **Address Existing LOS Problems**

A series of signalized and unsignalized intersections were identified that currently operate at LOS "E" or LOS "F". The city should prioritize these locations and propose appropriate improvements. A map of existing intersection problems should be prepared and updated as improvements are made and new studies are conducted throughout the city.

When designing and implementing intersection improvements, one must consider the problem of induced traffic. Just like in an Iowa corn field, "if you build it...they will come." Transportation planners from around the world have learned this the hard way. It seems to make sense that if a road is congested; if vehicles seem to be having problems because of too much traffic—a way to solve those problems is to make the roads bigger—then the vehicles will have more space and there will be less congestion.

Unfortunately, roads and traffic are more like water in a pipe than they are like people given choices. The vehicles fill the space, no matter how big it is. That is why many municipalities, notable Seattle, Washington; who have a goal of a balanced safe and efficient transportation system, have simply stopped planning for automobiles. These communities

have decided that they have the facilities they need for the number of automobiles they want—and they are now spending all their transportation resources accommodating bicyclists and pedestrians, truck traffic and differently-abled residents.

#### **Periodically Re-Time Traffic Signals**

Traffic signals should be checked periodically to determine if changes in existing travel patterns necessitate changes to the current signal timing and phasing plan. This results in improvements to traffic flow, decreased congestion, and enhanced safety.

#### **Conformity with the Millennium Edition of the MUTCD**

The Manual on Uniform Traffic Control Devices (MUTCD) defines the standards to install and maintain traffic control devices on all streets and highways. Many of the changes in the latest edition of the MUTCD require compliance by January 17, 2003. Some of the critical changes are briefly described below.

- All traffic signs must have a retroreflective background or be illuminated.
- Centerline pavement markings are required on all urban arterial or collector streets greater than 20 feet wide with an average daily traffic volume greater than 6000 vehicles per day.
- All “red arrow” lenses in existing traffic signal heads must be replaced with the standard “red ball”.

It is recommended that appropriate staff from the city attend a workshop on the new MUTCD to learn what, if any, additional impact the changes to the MUTCD will have on the city. Additional information is available from the official FHWA website at: <http://mutcd.fhwa.dot.gov>.

#### **Pavement Management System**

The PVPC currently collects pavement distress information to maintain a regional pavement management system for all federal-aid eligible roadways. The city of Northampton has utilized a private consultant to perform pavement management

services for the city. At a minimum, the PVPC and the city should meet on a regular basis to coordinate their pavement management efforts to improve the efficiency of data collection.

In the long term, the city should consider training a staff member to coordinate a permanent pavement management system. This system would assist in the planning and selection of future maintenance activities and be updated on a regular basis.

#### Sign Inventory

The city of Northampton should consider conducting an inventory of the location, type and condition of all existing signs and poles. It is important to ensure that all existing sign poles conform to current “break-away” standards and that signs remain in good condition to ensure visibility is maintained. Based on the results of the initial inventory a priority listing of improvements should be developed.

#### **f. Bicycle**

Along with its neighbor, the town of Amherst, the city of Northampton is often cited as one of the most bicycle-friendly communities in the Pioneer Valley. The city has some off-road bike paths, a marked bicycle lane and numerous bike-parking racks placed around the city. This plan recommends that the city continue its efforts to promote bicycling via implementation of the projects identified in the existing bike path and route plan. In addition, as mentioned in the organizational recommendations listed above the city could benefit from a policy explaining how, why, when and where bicycle infrastructure changes are made. The needs of bicyclists must be considered in all transportation projects and certainly in the design and implementation of the proposed Traffic Calming program.

#### **PRODUCTS:**

- ➔bike facilities policy
- ➔bike locker policy

### **Bicycle Lane Designation**

The latent demand model analysis demonstrated a high potential for bicycle use in many of Northampton's neighborhoods. To further provide accommodations for bicycling the city may want to review the signing and striping policy for municipal streets. Wide travel lanes or unmarked lanes may be re-striped to better accommodate cyclists. Popular routes for cyclists can be designated through the use of "Share the Road" signs (MUTCD) and the use of dedicated bike lanes where conditions permit.

### **Catch Basins**

The city of Northampton should develop a program to systematically convert all catch basin covers to a "bicycle-safe" format.

## **g. Transit**

It is important to maintain safe and convenient transit access in the city to allow residents an alternative way to get to work, school, shopping areas and other locations. Transit improves mobility and access for low income people, provides congestion relief, and promotes livable communities. To enhance the connection between transit and local quality of life, transit supportive policies such as mixed-use zoning, parking management and traffic calming should also be considered.

The City should meet with the PVTA on a regular basis to discuss the existing and future transit needs of the community. It is also important to consider the amount and source of funding required to implement and sustain changes to transit service in the city prior to requests for additional service.

The PVPC conducted a detailed transit ridership survey of all Northampton based transit routes in the spring of 2001. This survey contains detailed information on transit ridership of the selected route(s), comments from transit riders, and recommendations to improve transit service. A number of specific issues were identified as part of this survey. These specific issues are associated with the Red 44 route,

improvements to passenger information, access to the system, and PVTA efforts to mitigate the impacts of the Coolidge Bridge construction.

#### PRODUCTS:

➔Transit Survey

#### Red 44 Route

The Red 44 Route operates with one bus that follows a long semi-circular route on the north side of the city. This route connects many elderly and low-income housing areas with shopping areas and the centers of Northampton and Florence

- New Service Requests for R44 Route

PVTA has considered requests to reconfigure the service in the Big Y/Wal-Mart Plaza to serve both stores directly. Currently the bus only stops near the Wal-Mart Store. Because of operational concerns with the physical layout of the combined shopping plaza, having the bus stop closer to the Big Y requires more time than is available with the current R44 schedule. PVTA has indicated that the only way to accommodate this request would require adding a second bus to the schedule. Adding a second bus significantly increases the cost of operating this route.

- On Time Performance Issues

This route has difficulties operating on time. These difficulties include a winding alignment with numerous turns at congested locations. The route also serves a number of wheelchair-bound passengers and shoppers with their groceries that take a little more time to board the bus than a regular passenger. Recently, the Red 44 had 22% of its trips arrive 6-10 minutes late while an additional 22% of its trips were more than 10 minutes late. It is important to consider these on time performance issues as part of any future schedule options for this route.

- Reduced Fare

The Red 44 route is the only route in the PVTA system that operates with a 25-cent reduced fare instead of the standard PVTA fare structure. This reduced fare dates back to the routes creation as a community focused route that was originally

funded through block grant funds. This funding source has long since disappeared, as federal block grant funds can no longer be used in this manner. There is a issue of equity around this break from the standard PVTA fare structure. While this route serves a number of low-income areas, many of PVTA's other routes service similar low-income areas which receive no discount. A fare increase to the standard PVTA fare structure should be considered in conjunction with any new service changes for this route to maintain equity in PVTA service.

### **Access to the Bus**

A key part of the passengers transit trip is the way they access the bus. The time spent on the bus is only one part of the larger trip that a passenger makes. As a result it is important to consider the means of access for passengers to transit to ensure that they are safe and convenient. Attention and improvements to access points can improve ridership.

- **Bus Stops**

Unlike much of the rest of the PVTA system, many of the Northampton routes operate as "flag" routes rather than having posted bus stop. Only the M40, B43 and Five College O39 routes have completely posted bus stops. The other routes rely on the passengers to "flag" down the driver to stop at a convenient point along the route. This system requires current and potential passengers to have prior knowledge of the bus routes and times.

It is recommended that PVTA work with the City of Northampton to post bus stops and eliminate the practice of "flag" stops. With a transient population in the area and with 20% of the PVTA ridership turning over each year, posted bus stops are an important indicator of transit service and give people a place to wait for the bus. Operationally posted bus stops give drivers clear points to look for passengers and stops thus limiting the chance of missing passengers. Further, posted bus stops can be placed in safe traffic locations rather than relying on the passenger's judgement.

- Bus Shelters

Bus Shelters present one of the greatest challenges for PVRTA. Recent surveys have concluded that passengers are more likely to be dissatisfied with the condition of bus shelters than most other customer service indicators. However, during PVRTA's recent non-riders survey respondents indicated that improving bus stop waiting areas would be one of the most efficient means of attracting non-riders to transit.

There are presently 8 bus shelters in the Northampton area. The condition of these shelters varies depending on their location and use. PVRTA should look at the feasibility of installing additional shelters at key bus stop locations throughout the city.

- Passenger Information

In the public meetings for the Northampton Transportation Plan community members expressed an interest needing more information about PVRTA services. Efforts to improve public information about PVRTA services and passenger waiting areas could likely be combined into a successful Transportation Demand Management (TDM) grant. PVRTA and Northampton should partner together to identify locations of passenger waiting needing improvements and what other amenities should be added. In the past, PVRTA has been very successful in partnering with communities to meet local needs through TDM grants.

- Bicycle Access and Racks

Over the past five years PVRTA has implemented a comprehensive and innovative program to support and promote bicycle use in the Northern PVRTA Service area. Bike racks have been added to almost all PVRTA buses servicing routes in the area. PVRTA has also made a significant investment in bike racks and ancillary equipment in the communities.

The survey results present some interesting questions. The percentage of passengers using bicycles to access transit was lower than expected. One reason for this may lie in the scarcity of bike racks near bus stops. In addition, the bike racks on



board the buses and near bus stops have space for only two bikes thus limiting the number of people that can use them.

PVPC is planning a survey of Norwottuck Rail Trail users in 2002 and will include questions about transit links in an attempt to determine the importance of bike racks at bus stops.

#### **PVTA Route 9 Services**

The main corridor of service for the PVTA in the Northampton area is along Rt. 9 stretching from Smith College across the Coolidge Bridge through Hadley and into Amherst and UMass. PVTA has three routes in this corridor that have been impacted by the reconstruction of the Coolidge Bridge that began this summer. As a result PVTA working with its operators and with the assistance of PVPC implemented changes to the schedules of the effected routes: M40, B43 and O39.

The main changes to the PVTA routes that cross over the Coolidge Bridge has been to add time to the B43 schedule between Northampton and Amherst. The time was added to the schedule by extending the running times for many trips on the route. Even before the construction started this summer the buses on this route were running significantly late. During the April survey period 17% of the weekday trips were late and 37% of the Saturday trips were late. The changes implemented for the bridge construction will alleviate these On-Time performance issues.

The M40 Minuteman Express route schedule was also adjusted. The M40 departure times have been shifted to leave 15 minutes past and 15 minutes before the hour. Previously they departed on the hour and half-hour, which allowed for B43 and M40 trips leaving at the same time. In addition, the Five College Route O39 schedule was adjusted so that existing time in the schedule would allow for bridge related delays.

These changes were made during the summer and implemented with no difficulty at the September 4 schedule change. Discussions with PVTA have indicated that there have only been limited delays of less than ten minutes with the new schedules.

## **h. Pedestrian**

Everyone is a pedestrian sometimes. Motorists and bicyclists walk to and from their parked vehicles (a bicycle is defined as a vehicle by Massachusetts law—and as such is subject to all the same laws) and transit users walk to and from stops. Like bicyclists, pedestrians are ‘vulnerable road users’. The city needs to pay special attention to their needs. The proposed Traffic Calming program will benefit pedestrians as will the proposed public information and education program and the revised zoning ordinances.

### **Crosswalks**

The city needs to adopt a policy for consistent crosswalk designation. All crosswalks in the city should conform to the standards provided in the latest version of the MUTCD. In locations where increased visibility is required or in locations where a crosswalk is unexpected, the area of the crosswalk may be marked with white longitudinal (90°) or diagonal (45°) lines. It is recommended that either the diagonal or longitudinal treatment be selected as a standard to be used at all crosswalks where special emphasis is required.

Poor street lighting is also an issue at some crosswalks. An inventory of the location of existing crosswalks could assist the city in identifying locations where additional street lighting is required.

### **Sidewalk Inventory**

The city of Northampton should conduct an inventory of all sidewalks. This inventory should be redone every 3-5 years and updated as improvements are made to existing sidewalks and new sidewalks are constructed. Included in the sidewalk inventory should be an inventory of the adequacy of street lighting at crosswalks. The inventory should be used to prioritize improvements.

PRODUCTS:

- ➔pedestrian walk time study
- ➔outline of a sidewalk inventory

## **i. Regional Issues**

A number of regional transportation issues were identified as part of the public participation process for the Northampton Transportation Plan. It will be important for the permanent Transportation Committee to closely monitor these issues and assist in the development of studies and conceptual plans to advance future transportation concepts that are deemed beneficial to the City of Northampton.

### **Connecticut River Crossing Study**

A feasibility study for the construction of a second bridge over the Connecticut River was recently commissioned by the Massachusetts Highway Department (MassHighway). An advisory committee comprised of local officials (including the Mayor of Northampton) was appointed by MassHighway to assist in the direction of this study.

The recommendations of this study could have a dramatic effect on local traffic patterns and land use development in both Northampton and surrounding communities. It is recommended that the permanent Transportation Committee work with the Mayor to assist in the development and review of this study to ensure that it is multi-modal in nature.

### **Passenger Rail Service**

Recently, Hartford's Capital Region Council of Governments initiated a major investment study to develop a regional transit strategy. One component of the recommended alternative is the development of commuter rail service between New Haven, Hartford and Springfield. If successful, it could be possible to extend this service north to Northampton in the future.

The city should work with the PVPC to closely monitor the status of any proposed new north/south passenger rail service. A feasibility study of developing passenger rail service from Northampton should be conducted if the Springfield to Hartford service is implemented.

Many residents have also expressed the desire to develop east/west light-rail transit service between Northampton and Amherst. An initial assessment of the feasibility of this concept could potentially be explored as part of the Connecticut River Crossing Study. The Transportation Committee should explore opportunities to expand and improve transportation alternatives to the automobile for the City of Northampton. It will be important to identify reliable funding sources prior to the advancement of any new transportation services.

#### **Multi-Modal Transportation Center**

The city has expressed interest in the development of a multi-modal transportation center to combine parking and transit opportunities in the downtown area. It is vital that a reliable source of funds be identified prior to the advancement of this concept. In addition, it will be important to design such a center to minimize its impact on existing transit service performance. The Transportation Committee should perform additional research to determine if a feasibility study is warranted for a multi-modal transportation center in downtown Northampton.

# 5.

## Transportation Policy

Like any plan, the Northampton Transportation Plan is a “work in progress.” Transportation plans must have the flexibility to adapt to the future needs of the community. Transportation systems are dynamic and constantly changing based on fluctuations in the regional economy which in turn effects population and employment.

While no plan can address solutions to all identified problems, this plan includes a number of specific solutions and, perhaps more importantly, details a mechanism—the development of a permanent Transportation Committee—for addressing future problems. The permanent Committee will identify areas in which more information is required to address both the issues raised during the public participation component of this plan and future issues not yet imagined by current residents. The development of a series of broad transportation policies provides guidance for how the City responds to public concerns, identifies how future problems are addressed, and defines a consistent approach to maintaining the existing transportation system.

Specifically, the City might like to consider adopting policies addressing the following areas (DRAFT policies included below). Note that within each policy area there may be more than one action item proposed to facilitate implementation. The plan committee has endorsed the general principles behind some of these proposed actions. Additional actions emerged out of the research conducted for this plan, but were not unanimously endorsed by the committee. All suggestions below are included for consideration by the permanent committee.

### a. Traffic Calming

Proposed policy: The city will work to “calm” traffic in residential areas through a combination of physical alterations

to the roadway environment, (chicanes, curb bulbs, raised crosswalks, etc) and public education. Traffic calming interventions will be initiated by residents and implemented through a collaborative effort of Police, DPW, and Planning department staff (model program materials in Products section).

Actions/rules/regulations to implement the policy

- Create a city-sponsored traffic calming program—*included as part of the Recommendations section.*
- Add traffic calming standards for new streets—*endorsed by committee.*
- Update the DPW web-site to make it user friendly—*included as part of the Recommendations section.*
- Launch a public education and information campaign—*included as part of the Recommendations section.*

**b. Transportation Effects of Development**

Proposed Policy: The city will promote the integration of transportation and land use policies that result in more efficient use of the city's transportation system, available land and existing physical infrastructure.

Actions/rules/regulations to implement the policy

- Adopt an adequate facilities ordinance to require adequate off-site road, water and sewer before any future development project proceeds.
- Require projects to mitigate not only direct traffic impacts (drops in level of service) but also, when practical, to pay for the incremental traffic impacts of those projects on streets when the impacts will not reduce LOS—*endorsed by committee.*
- Coordinate transportation and land use to encourage appropriate development in rural areas.
- Develop and implement an annual traffic counting program— *included as part of the Recommendations section.*
- Develop and adopt transit-oriented development ordinances— *included as part of the Recommendations section.*

### c. Transportation Demand Management

Proposed Policy: The city will enhance mobility of residents and support the use of alternative transportation modes by improving accessibility to public transportation, carpooling, telecommuting, bicycling and walking options.

#### Actions/rules/regulations to implement the policy

- Serve as a model transportation management agency, incorporating some of the recommendations of the Route 9 TMA, including, but not limited to:
  - Employee parking space cash buyouts
  - Ride sharing programs
  - Bicycle storage and, when possible, shower, facilities.
  - Employee parking space cash buyouts*—endorsed by committee*
- Identify areas for the construction of park and ride lots to reduce the number of single occupant vehicle trips in the City.
- Conduct an outreach program to improve the overall awareness of existing transit and school bus services to alleviate capacity problems in student parking lots and reduce automobile trips in the City.
- Periodically re-time traffic signals— *included as part of the Recommendations section.*

### d. Livability

Proposed Policy: The city will reduce air pollution and minimize water, soil, and noise pollution, and use transportation enhancement activities to preserve and improve the natural and built environments, making the city more healthy and attractive.

#### Actions/rules/regulations to implement the policy

- Discourage dead-end streets in new housing projects and link new projects to existing dead-end streets. Interconnectivity, especially for pedestrians and bicycles, prevents segregation of housing projects, allows more efficient circulation, provides choices for travelers, and doesn't promote a pattern of wealthy dead-end streets and poorer through streets.

- Develop standards on how often street connections should be made by identifying intervals of no greater than 1,000 feet, for example, except when restricted by permanently protected open space, wetlands or other site limitations.
- Require pedestrian and bicycle interconnectivity whenever possible and always for new dead-end streets.
- Narrow the required road width standards for both residential and commercial projects.
- Require granite curbing, where feasible, along both sides of the street in urban areas.
- Create a target LOS to maintain throughout the City. For example, intersections should operate at LOS “D” or better in the downtown and LOS “C” or better in all other areas.
- Identify areas where the City could petition MassHighway for roadway maintenance rights to potentially provide additional on-street parking.
- Change existing regulations to encourage or require new buildings to be constructed closer to the road, to frame the street and slow down traffic.
- Set targets for improving safety by establishing realistic goals to reduce crashes and travel speeds.
- Amend the existing noise ordinance to set limits for transportation related noise.
- Conduct a sign inventory— *included as part of the Recommendations section.*

**e. Pedestrian facilities**

Proposed Policy: The city will work to ensure a high quality pedestrian environment recognizing that walking is the primary mode of travel and the basis for all other modes.

Actions/rules/regulations to implement the policy

- Include pedestrian phases (push button or automatic) and appropriate equipment as part of every new and future signalized intersection design project. Pedestrian phases could operate as either an exclusive phase or concurrently with parallel vehicular movements—*endorsed by committee.*
- Conduct a sidewalk inventory (including crosswalks and street lighting) — *included as part of the Recommendations section.*



- Implement a sidewalk pavement management program—*endorsed by committee.*
- Develop and adopt a sidewalk ordinance for the city that provides for sidewalks as part of all new roadway construction and maintenance projects except where existing site limitation restrict their installation.
- Develop and adopt a policy for consistent crosswalk designation.

**f. Bicycle facilities**

Proposed Policy: The city of Northampton will accommodate bicycling as a viable means of transportation through a combination of bicycle-related facilities, rules, regulations and education programs.

Actions/rules/regulations to implement the policy

- Create bicycle lanes on numbered highways and arterials whenever feasible and when adequate resources are available—*endorsed by committee.*
- Elaborate a city policy on the use, implementation and maintenance of bicycle facilities— *included as part of the Recommendations section.*
- Convert all catch basin covers to a “bicycle-safe” format—*included as part of the Recommendations section.*



# 6.

## Existing Conditions

### 6.1 Summary

Planning, like life, is all about striking the right balance. Because no community has infinite resources, and because communities are comprised of people with varying interests, desires and values, no community will ever look, feel or be what every resident wants it to be. Nevertheless, we need to know what we have, to help decide what we need, and what is possible as we strive to meet resident's needs and desires.

Transportation planning is an established enterprise. There are conventions transportation planners follow in their work. There are methods used to collect traffic volume data—which, though flawed, do yield useful information. There are sources of data, such as crash data, which, though flawed, can be used to understand crash problems. There is no correct answer to the question of “How much information does one need to define a problem?” Our goal in reporting on existing conditions is to summarize what we learned and to always explain the limitations of the data used to describe the existing condition.

### 6.2 Community Profile

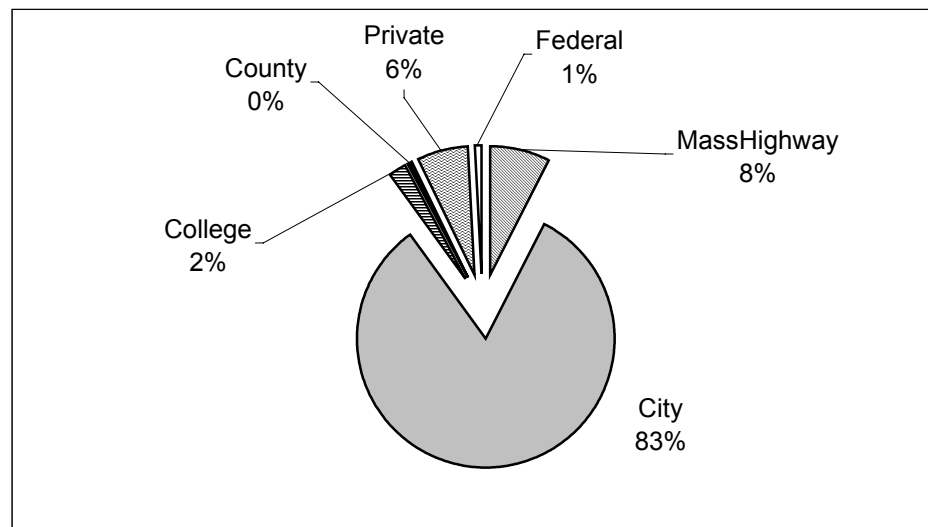
Bordered by the Connecticut River to the east, Northampton maintains an attractive mix of industry, retail, service, education and quality of life which has contributed to its becoming a popular place to live and work. The City encompasses an area of 34.5 square miles and is home to several of the Pioneer Valley's major employers including Smith College, Cooley Dickenson Hospital, the Veterans Medical Center, and the Kollmorgen Corporation.

Recent information from the 2000 Census reports a population of 28,978 for the City, which is a 1% decrease from 1990 figures. The entire City is defined as an urbanized area with an average population density of approximately 840 people per square mile. Based on information from the 1990 Census, over 60% of all residents work in the City of Northampton.

**a. Roadways**

Served by four exits along Interstate 91 (I-91), Northampton has excellent highway access as well as access to arterial roadways such as Routes 5, 9, 10, and 66. All total, there are 182.3 miles of roadway in Northampton. Of these, 150.5 miles or 83% are maintained by the City. Figure 6-1 shows the breakdown by maintenance authority of all the roadways in the City.

**Figure 6-1 - Maintenance Authority of Northampton Roadways**



The Federal Highway Administration (FHWA) classifies roadways to identify roadways eligible for federal funds and as a mechanism to inventory our nation's roadway network. Roadways are grouped into classes according to the service they are intended to provide. Federal funds are restricted to roadway maintenance projects that require full-depth reconstruction.

The State of Massachusetts has adopted seven functional classifications that are summarized below:

**Interstate** - Freeways serving as principal arterials providing service to substantial statewide and interstate travel.

**Rural Principal Arterials and Urban Extensions** - Major highways that serve corridor movements having trip length and travel density characteristics that indicate substantial statewide or interstate travel. Principal Arterials include the Interstate system.

**Rural Minor Arterial and Urban Extensions** - Roadways with statewide significance that link cities and large towns form an integrated network of intracounty importance.

**Rural Major Collectors and Urban Minor Arterials** - Those roads that provide service to cities, towns and other traffic generators not served by the arterial system; roads that link these places with the arterial system; and roads that serve the more important intracounty travel corridors.

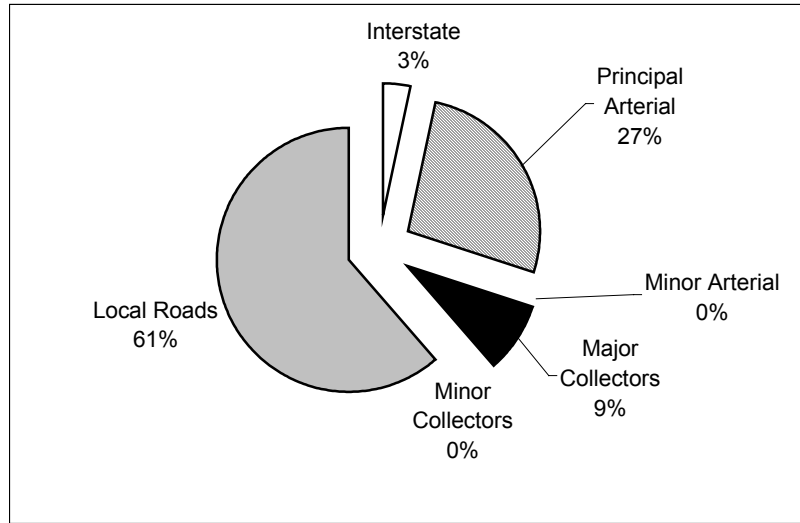
**Rural Minor Collectors and Urban Collectors** - Roads that bring traffic from local roads to collector roads; roads that provide service to small communities and link local traffic generators to the rural areas.

**Local Roads** - Roads that provide access to adjacent land; roads that provide service to relatively short distances. Local roads include all roads not classified as part of the principal arterial, minor arterial, or collector system.

**Other Urban Principle Arterials** - Roadways with significance that service access to and within the urbanized area. Connections to interstate and rural principle arterials are typical.

Figure 6-2 summarizes the percentage of roadway miles by each functional classification category for the City of Northampton. In an urban area, all roadways except those classified as local are eligible for federal funds. The entire City of Northampton is currently defined as an urban area. Currently, 61% of all roadways in the City of Northampton are classified as local roads. The functional classification of all roadways in the City of Northampton is shown in Figure 6-3.

**Figure 6-2 – Functional Classification of Northampton Roadways**



The functional classification of a roadway may be upgraded or downgraded based on changes in land use, population, and vehicular volume provided they do not exceed the mileage constraints for the region. Communities can request a change in the functional classification through a written request to the PVPC.

If PVPC concurs that a change is warranted, the request is submitted to MassHighway Planning for their approval. Once approved by MassHighway, the change requires endorsement by both the Metropolitan Planning Organization (MPO) and the FHWA before the functional classification can be officially changed.

#### **b. Bridges**

Bridge crossings are a focal point for transportation concerns as many streets and highways converge into a limited number of crossings over rivers, streams, roadways, railroads, etc. In order to qualify as a bridge, a structure must have a span of at least 20 feet. There are a total of 44 bridges in the City of Northampton, 21 of which are owned and maintained by the City.

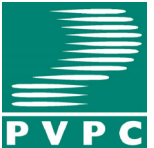
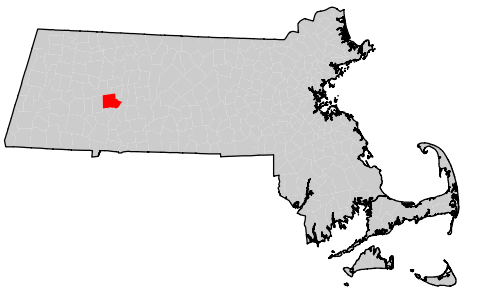
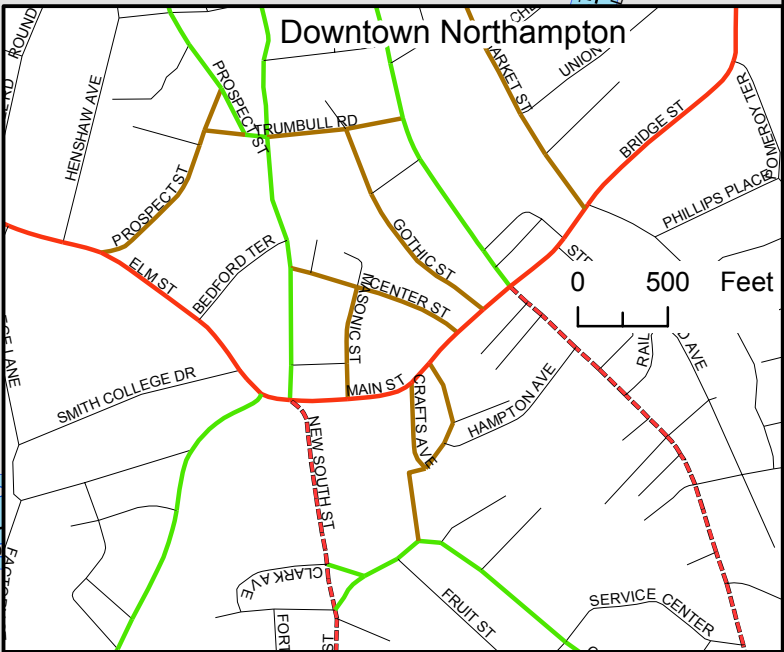
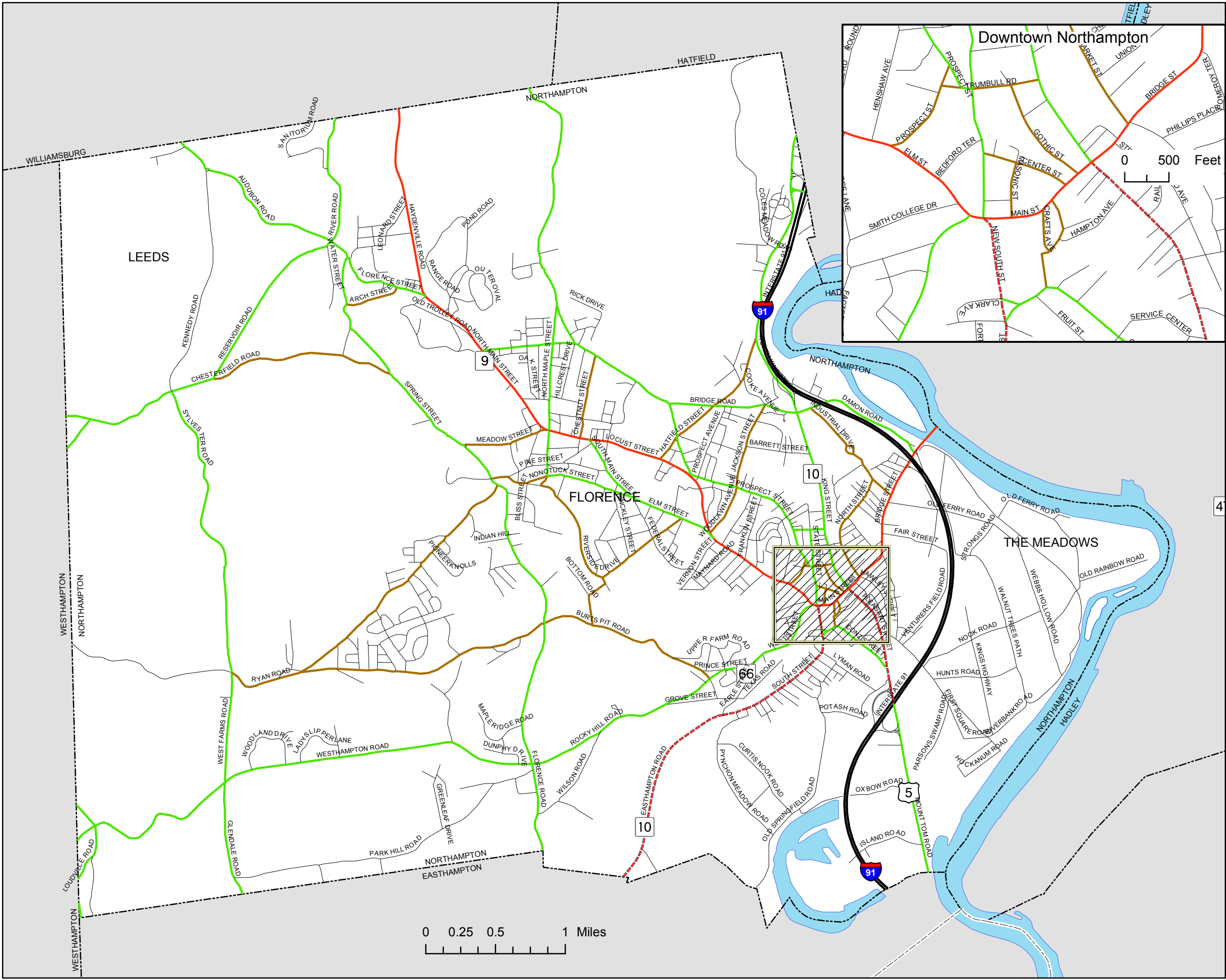
Figure 6-3

Northampton, Massachusetts

# Roadway Classifications

## Legend

- Functional Class**
- Interstate (1)
  - Rural Prin. Art./Urban Ext. (2)
  - Other Prin. Arterial (4)
  - Urban Minor Art. or Rural Maj. Coll. (5)
  - Urban Collector or Rural Minor Coll. (6)
  - Local (0)







All of the bridges throughout the state undergo routine structural inspection. Using a generally accepted rating system developed by the American Association of State Highway and Transportation Officials (AASHTO), MassHighway surveys and rates all bridges. This process identified bridges that are structurally sufficient, functionally obsolete and structurally deficient.

A bridge is classified functionally obsolete when deck geometry, local capacity, clearance or alignment of the approach roadway no longer meets the usual criteria for the highway it serves. A bridge is classified structurally deficient when the structural scores are below the acceptable sufficiency rating. Sufficiency rating is a function of the structural adequacy and safety, functional obsolescence and serviceability of a bridge. The most recent AASHTO bridge rating information for all Northampton bridges is presented in Table 6-1.

Currently, 9 of the 44 bridges in the City of Northampton are classified as Structurally Deficient. Seven additional bridges are classified as Functionally Obsolete. Both the Route 5 bridge over the Oxbow and the Chesterfield Road bridge over the Roberts Meadow Brook are both closed to all traffic.

#### **c. Current Zoning and Sub-division Regulations Related to Transportation**

The City of Northampton recognizes the importance of providing residents and visitors with transportation options. Planning documents identify improvements to pedestrian connections, bicycle paths and lanes, and mass transit as well as traffic calming measures as important actions to achieve various transportation, economic, recreation and neighborhood development goals.

Development within a community is regulated by the zoning ordinances and sub-division regulations that are in effect. Modifications and enhancements to zoning regulations can have a direct impact on future development and in turn improve traffic conditions and the safety of an area.

**Table 6-1 - Northampton Bridge Rating Information**

Over	Under	Owner	Year Built	Year Rebuilt	AASHTO Rating	Deficiency Rating	Comment
ST 10 NEW SO ST	RR ABANDONED	MassHighwav	1948		85.1		
HWY JACKSON ST	OTHER BIKE PATH	City	1890	1977	77.5 FO		
ST 10 NEW SO ST	HWY CLARK AVE	MassHighwav	1948		87		
<b>ST 66 WEST ST</b>	<b>WATER MILL RIVER</b>	MassHighwav	<b>1924</b>		<b>49.9 SD</b>		<b>Contract Advertised – 1 nphase in FY2002 TIP – Weight Restr.</b>
<b>HWY BLISS ST</b>	<b>WATER MILL RIVER</b>	City	<b>1921</b>		<b>35.2 SD</b>		
HWY PINE ST	WATER MILL RIVER	City	1850	1962	91		
HWY MEADOW ST	WATER MILL RIVER	City	1977		87.9		
HWY MAIN ST LEED	WATER MILL RIVER	City	1925		72.8 FO		
HWY MAIN ST LEED	WATER SLUICEWAY	City	1850	1925	73.8 FO		<b>Weight Restriction</b>
<b>HWY OLD SHEPHD R</b>	<b>WATER MILL RIVER</b>	City	<b>1876</b>		<b>14.6 SD</b>		<b>Weight Restriction</b>
HWY MULBERRY ST	WATER MILL RIVER	City	1992		67.7		
<b>HWY RIVER RD</b>	<b>WATER MILL RIVER</b>	City	<b>1922</b>		<b>48 SD</b>		
HWY WATER STREET	WATER ROBERTS MEADOW	City	1929		80.5		
HWY RESERVOIR RD	WATER ROBERTS MEADOW	City	1956		64.1		
<b>HWY CHESTFLD RD</b>	<b>WATER ROBERTS MEADOW</b>	City	<b>1936</b>		<b>9.2 SD</b>		<b>Closed/Contract Advertised Weight Restriction Weight Restriction</b>
HWY KENNEDY ROAD	WATER ROBERTS MEADOW	City	1925	1955	54.1		
HWY PARK HILL RD	WATER BASSET BROOK	City	1955		78.3		
HWY DRURY LANE	WATER NBR MANHAN RIV	City	1997		80.9		
<b>ST 66 WSTHMPN RD</b>	<b>WATER NBR MANHAN RIVER</b>	MassHighwav	<b>1927</b>		<b>49.2 SD</b>		
ST 9 HYDNVLL RD	WATER BEAVER BROOK	MassHighwav	1957		89.9		
HWY MAIN ST LEEDS	WATER MILL RIVER	City	1925	1989	61.5 FO		
HWY MAIN ST LEED	WATER S CHANNEL MILL RIV	City	1850		66.7 FO		
HWY MAIN ST LEED	WATER N CHANNEL MILL RIV	City	1850		77.8 FO		
<b>HWY CLEMENT ST</b>	<b>WATER MILL RIVER</b>	City	<b>1894</b>	<b>1923</b>	<b>15.6 SD</b>		<b>Weight Restriction</b>
ST 10 SOUTH STREET	WATER MILL RIV DIV CAN	MassHighwav	1939		89.3		
HWY RYAN RD	WATER PARSONS BROOK	City	1956		90.4		
I 91 SB	HWY ISLAND ROAD	MassHighwav	1965		86.8		
I 91 NB	HWY ISLAND ROAD	MassHighwav	1965		86.8		
I 91 SB	COMB US 5 BMRR	MassHighwav	1965		83.3		
<b>I 91 NB</b>	<b>COMB US 5 BMRR</b>	MassHighwav	<b>1965</b>		<b>65.2 SD</b>		
I 91 NB	HWY HOCKANUM RD	MassHighwav	1965		78.1 FO		
I 91 SB	HWY HOCKANUM RD	MassHighwav	1965		78.1 FO		
I 91 NB	HWY OLD FERRY RD	MassHighwav	1965		90.2		
I 91 SB	HWY OLD FERRY RD	MassHighwav	1965		90.5		
I 91 NB	ST 9 BRIDGE ST	MassHighwav	1965		86.6		
I 91 SB	ST 9 BRIDGE ST	MassHighwav	1965		87.6		
I 91 NB	OTHER ABANDONED RR	MassHighwav	1965		95.7		
I 91 SB	OTHER ABANDONED RR	MassHighwav	1965		95.7		
I 91 NB	HWY DAMON RD	MassHighwav	1965		90.2		
I 91 SB	HWY DAMON RD	MassHighwav	1965		90.2		
I 91 NB	COMB I 91 RAMP & BMRR	MassHighwav	1963	1989	81.8		
I 91 SB	COMB I 91 RAMP & BMRR	MassHighwav	1963	1989	81.8		
I 91 SB OFF RAMP	US 5 & ST 10 N KING ST	MassHighwav	1963	1993	95		
<b>HWY OLD SPFLD RD</b>	<b>WATER MILL RIVER</b>	City	<b>1940</b>		<b>9.8 SD</b>		<b>Contract Advertised</b>
<b>US 5 NORTH ST</b>	<b>WATER MAHAN RIV OXBOW</b>	MassHighwav	<b>1928</b>		<b>22.4 SD</b>		<b>Under Construction</b>
<b>ST 9</b>	<b>WATER CONNECTICUT RIVER</b>	MassHighwav	<b>1937</b>		<b>50.0 SD</b>		<b>Under Construction</b>

Source: Massachusetts Highway Department, 4/2001

The **Zoning Ordinance** regulates new development and uses within the City. The sections within the Ordinance relating to transportation, includes:

- Requirement for bicycle parking spaces to be provided for uses that require ten or more parking spaces (except in the Central Business District) (Note: Number of bicycle spaces required is not specified.) (Section 8.12);
- Restriction of any obstruction to vision over 3 feet tall within a triangle formed by the lot lines abutting the intersection and the a line connecting points on these lot lines at a distance of 25 feet from the point of intersection of the lot lines. This restriction also applies to the intersection of a driveway with a street in the Business or Industrial districts. (Section 6.8.5);
- Prohibits structure or vegetation greater than 3 feet from being constructed within 5 feet of the front lot line unless it can be proved that it will not restrict visibility (Section 6.8.6);
- Common driveways are allowed by Special Permit to service up to three (3) lots (section 6.12);
- Shared parking areas are allowed by Planning Board Special Permit (Section 8.5);
- Off-site parking is allowed, following certain criteria, by Planning Board Special Permit (Section 8.6);
- For projects in the Central Business District, upon grant of a Planning Board Special Permit, proponent may pay a in-lieu of fee for use of municipal parking spaces (Section 8.11);
- Intermediate projects require Site Plan Approval by the Planning Board. Intermediate projects include projects between 2,000 and 4,999 sf of new construction/addition (excluding single-family dwellings and agriculture, horticulture or floriculture), require 6-9 additional parking spaces, planned village projects and other projects requiring special permit or site plan approval that are not major projects. (Section 10.11.2)
- Major projects require Site Plan Approval by the Planning Board. Major projects include 5,000 sf or more of new construction/addition, commercial parking lots or garages, including municipal garages, 10 or more spaces, convenience stores and fast food/take out restaurants, automobile service stations, rural residential incentive developments and planned business park projects. (Section 10.11.3.)

- All Site Plan applications should include location of parking, loading, public and private ways, driveways, walkways, access and egress points, estimated daily and peak hour vehicle trips generated by the proposed use, traffic patterns for vehicles and pedestrians showing adequate access to and from the site, and adequate vehicular and pedestrian circulation within the site. (Section 10.11.5.B. and C.)
- In addition to the above criteria, Major developments are required to develop a traffic impact statement including traffic flow patterns at the site, estimated daily and peak hour vehicle trips generated by the proposed use, traffic patterns for vehicular and pedestrians showing access to and from site and pedestrian and vehicular circulation within site, a plan to minimize traffic safety impacts through physical design, staggered work hours, promoting use of public transit or car-pooling or other appropriate means, traffic safety impact on adjacent roads, interior traffic and pedestrian circulation plan designed to minimize conflicts and safety problems, and adequate pedestrian access. (Section 10.11.5.C.)
- For new commercial, office or industrial buildings or uses over 10,000 sf, the plan shall evaluate alternative mitigation methods to reduce traffic by 35%, including public transit, van and car-pool incentive programs, including parking facilities and weather protected transit shelters; encouraging flexible hours and work weeks; encouraging pedestrian and bicycle access to the site; and provisions of integrating land uses, including on-site services, retail and housing. (Section 10.11.5.C.)

Criteria for Special Permit/Site Plan Approval is discussed in Section 10.11.6. The approval criteria includes the following:

- Determination that the project will promote the convenience and safety of vehicular and pedestrian movements within the site and adjacent areas; minimize traffic impacts on the streets and roads in the area. Allows reduction in parking up to 20% for employees if satisfactory methods are incorporated to reduce the need for parking into design and trip generation.
- Pedestrian, bicycle and vehicular traffic movement to be separated on site. Sidewalks provided between businesses.
- Pedestrian Flows: Sidewalks and internal pedestrian circulation systems should provide user-friendly pedestrian

access as well as pedestrian safety, shelter, and convenience.

- Recommended approaches provided including: wide (6 or 8') sidewalks, pedestrian walkways connecting focal points, plantings, distinguishing material, pedestrian scale features.
- Minimize number of curb cuts onto streets.
- Separate to extent possible – bicycle, pedestrian and vehicular traffic. Provide sidewalks between businesses within a development.
- Allows reduced parking requirements (up to 20% reduction) for major developments if the development meets certain trip reduction criteria. (Section 10.11.6);
- Mixed use zoning – Neighborhood Business allows residential, artists space, and small-scale retail (Table 5.1 Table of Use Regulations);
- Densest zoning is located in downtown, village areas (Zoning Map, Table 6-1);
- Allows Open Space Residential Development allowing smaller lot sizes (Table 6-1);

The **Subdivision Rules and Regulations** identify requirements for information on submission documents, roadway design, construction requirements, and inspection requirements related to the subdivision of land, including the development and construction of new roadways. The Rules and Regulations require that new roads comply with certain design and construction standards, including installation of sidewalks, and ensuring adequacy of access roads.

- Allows “hammer heads” v. cul de sacs.
- Limits dead-end to a maximum length of 850 feet. Developer must also consider future development potential of adjacent lots and extend the roadway if practicable.
- Definitive Subdivision Plans are required to include an Environmental Impact Analysis, which includes air quality analysis, and a Development Impact Statement, which includes the proposed impact on traffic.
- Environmental Impact Analysis. In order to insure the protection of the general public against any possible undesirable impact of the development on natural resources, the developer shall submit an analysis of any such matters of environmental concern, such as preservation of wetlands, surface and ground water quality

and air quality. Said analysis shall be conducted by a registered professional.

- Sidewalks. Sidewalks are required on both sides of all streets in Type II (business or industrial) subdivision, Type I (residential) subdivision collector streets, and Type I subdivision local streets serving townhouses and multifamily structures with over three units. Sidewalks are required on one side of all streets in all other Type I subdivision local streets. (Sections 7.07, 8.08)
- Adequate Access. Proponents may be required to upgrade substandard roads providing access to their proposed subdivision. (Section 7.09)

The Northampton DPW has an internal policy to put in new sidewalks whenever a street is reconstructed. The City anticipates that all the streets will be reconstructed in 20-30 years. There is no plan to retrofit existing sidewalks.

#### **d. Northampton Airport**

The Northampton Airport, formerly known as LaFleur Airport, is privately owned and operated. It is classified as a Basic Utility II airport that serves general aviation uses, both business and recreational. The airport has one asphalt runway 3,500 feet long and 50 feet wide with low intensity runway lighting. It offers minor and major maintenance service. The airport is closed to aircraft and helicopters with a gross operating weight in excess of 7,500 lbs. Seaplanes can operate on the Connecticut River, parallel to the runway.

### **6.3 Traffic Volumes**

Information on daily traffic volumes in the City of Northampton was researched through the PVPC traffic count database. This information included data collected from 1979 to the present by the PVPC and MassHighway. A complete listing of all daily traffic count information is presented in the Appendix to this document.

The PVPC also performed a total of ten new traffic counts to supplement the historical traffic count data. Representatives from the Department of Public Works and police Department were contacted to obtain input on the preferred locations of the

daily traffic counts. The locations of the 2000 traffic count data collected by PVPC are shown in Table 6-2.

MassHighway develops traffic volume adjustment factors to reflect monthly variations, as traffic volumes tend to fluctuate over the course of the year. Traffic volumes were collected over at least a 48-hour weekday period and then factored to reflect seasonal (monthly) variations to estimate an Annual Average Daily Traffic (AADT).

**Table 6-2 – 2000 Daily Traffic Count Locations**

<b>Facility</b>	<b>Location</b>
Bliss Street	south of Scanlon Avenue
Bliss Street	north of Scanlon Avenue
Elm Street	west of Riverside Drive
Elm Street	west of North Elm Street
Florence Road	south of Spring Street
Florence Road	south of Scanlon Avenue
Florence Road	north of Scanlon Avenue
Florence Street	south of Ryan Road
Milton Street	south of Elm Street
Riverside Drive	south of Elm Street
Ryan Road	west of Florence Road
Scanlon Avenue	east of Florence Road

## 6.4 Crash Data

Data on the crash history for the City's roadways was researched through the Massachusetts Highway Department records for the period January 1, 1997 through December 31, 1999. Over this three year period, nearly 2400 crashes were reported, most of which are automobile oriented and intersection related. In addition to crashes involving automobiles, a total of 56 crashes were reported between 1997 and 1999 that involved a pedestrian, 34 that involved a bicyclist, and 3 with railroad trains. A total of 1495 people were injured in the crashes reported over the three-year period, and a total of seven people were killed.





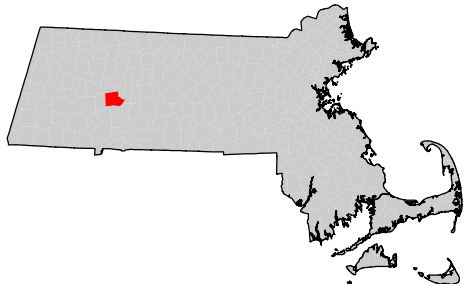
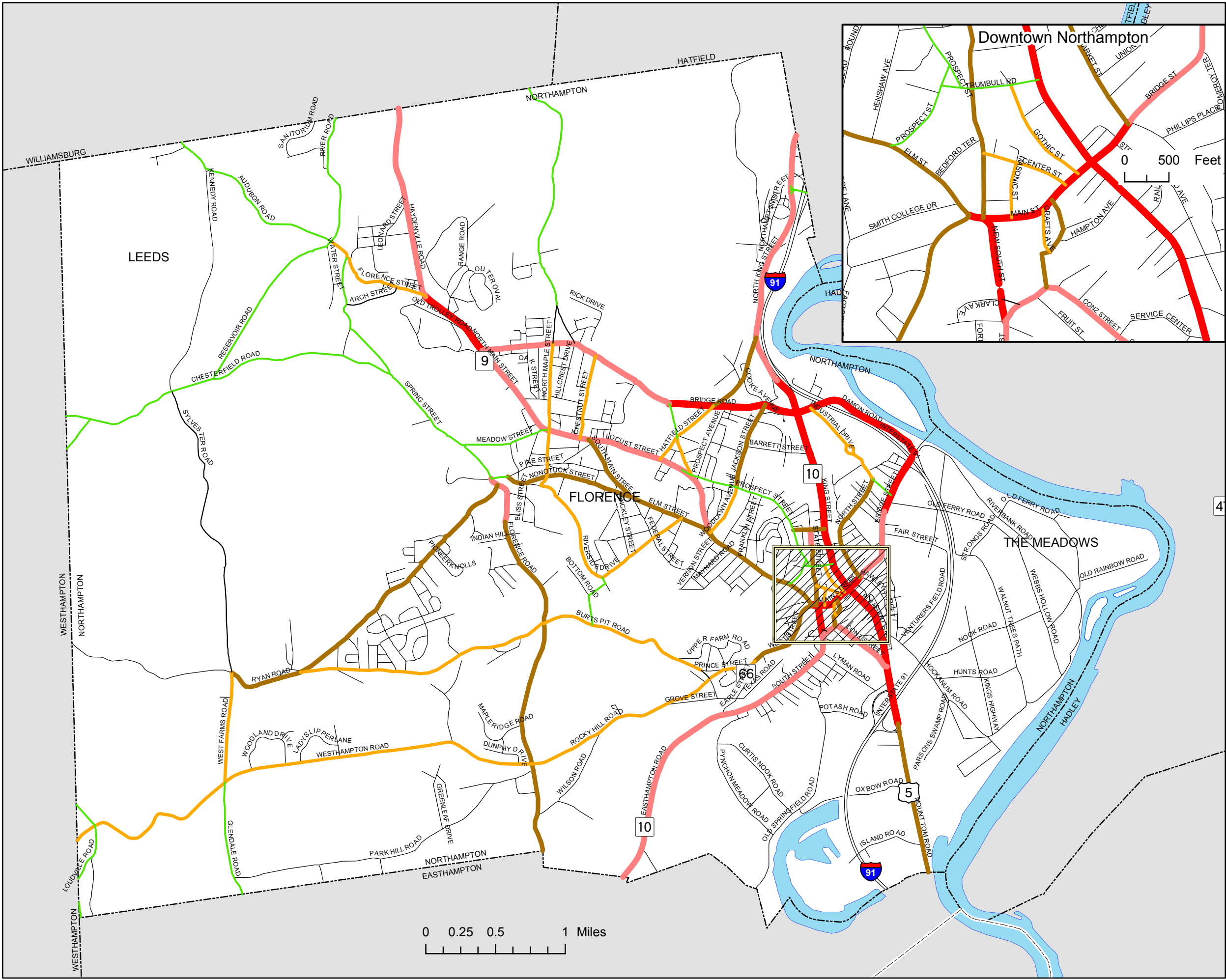
Figure 6-4

Northampton, Massachusetts

# Average Daily Traffic Volumes (ADT)

## Legend

- ADT**
- 1,000-2,500
  - 2,501-5,000
  - 5,001-10,000
  - 10,001-15,000
  - 15001 - 25000
  - Not Surveyed (or ADT < 1,000)





Due to the size of the study area and the inconsistency in reporting methods, only intersections which experienced at least 5 crashes in one calendar year are summarized in Table 6-3. Locations with fewer reported crashes or locations at which a crash could not be attributed to an intersection were not recorded. Crashes that occur within 250 to 300 feet of two or more intersecting streets are considered intersection crashes.

Based on discussions with the Northampton Transportation Committee, the top ten crash locations were identified and researched through the Northampton Police Department. Collision diagrams were prepared for each of the ten intersections and have been included in the Appendix to this document.

## **6.5 Capacity**

### **a. Intersection**

Level of Service (LOS) is an indicator of the operating conditions which occur on a roadway under different volumes of traffic and is defined in the 2000 Highway Capacity Manual (HCM)<sup>1</sup> by six levels, “A” to “F.” A number of operational factors can influence the LOS, including geometry, travel speeds, delay, and the number of pedestrians.

Depending on the time of day and year, a roadway may operate at varying levels. Level of Service “A” represents the best operating conditions and is an indicator of ideal travel conditions with vehicles operating at or above posted speed limits with little or no delays. Conversely, LOS “F,” or failure, generally indicates forced flow conditions illustrated by long delays and vehicle queues. Level of Service “C” indicates a condition of stable flow and is generally considered satisfactory in rural areas. Under LOS “D” conditions, delays are considerably longer than under LOS “C,” but are considered acceptable in urban areas. At LOS “E” the roadway begins to operate at unstable flow conditions as the facility is operating at or near its capacity. A summary of the delay criteria used to define LOS at both signalized and unsignalized intersections is presented in Table 6-4.

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<sup>1</sup> Transportation Research Board, *Highway Capacity Manual*, Washington, DC, 2000

**Table 6-3 – Summary of Reported Crashes**

<b>Intersection</b>	<b>Average Reported Crashes/Year</b>
Bridge Road with Hatfield Street	4.0
Bridge Road with North Maple Street	6.0
Bridge Street with Damon Road	28.7
Bridge Street with Day Avenue	2.7
Bridge Street with Hawley Street	3.7
Bridge Street at Pomeroy Terrace	3.3
Florence Road at Burts Pit Road	4.3
I-91 Exit 18 off ramp with Route 5	5.0
King Street with Barrett Street	7.7
King Street with Finn Street	9.3
King Street with Stop and Shop	2.0
King Street with Trumbull Road	2.7
King with Summer	6.3
King/Damon/Bridge Rd.	12.0
Main Street with Masonic Street	4.3
Main with Chestnut	3.7
Main/Pleasant/King/Bridge	9.7
Maple Street with Pine Street	3.0
North Elm with Hatfield	6.3
North Main Street with Bridge Road	4.0
Pleasant Street with Conz Street	11.3
Pleasant with Pearl	4.0
Prospect Street with Jackson Street	2.3
Prospect Street with Prospect Ave.	3.0
State Street with Finn Street	5.7
State with Trumbull	3.7
State/Main/New South/West/Elm	10.7
<b>Severity</b>	
Property Damage	453.0
Personal Injury	343.0
Fatality	2.3
<b>Accident Type</b>	
Angle	368.3
Head On	35.0
Rear End	228.0
Unknown	167.0

Source: Massachusetts Highway Department

**Table 6-4 – Level of Service Criteria for Signalized and Unsignalized Intersections**

Level of Service	Control Delay per Vehicle*	Average Control Delay*
	Signalized Intersection	Unsignalized Intersection
A	$\leq 10.0$	$\leq 10.0$
B	$> 10.0$ and $\leq 20.0$	$> 10.0$ and $\leq 15.0$
C	$> 20.0$ and $\leq 35.0$	$> 15.0$ and $\leq 25.0$
D	$> 35.0$ and $\leq 55.0$	$> 25.0$ and $\leq 35.0$
E	$> 55.0$ and $\leq 80.0$	$> 35.0$ and $\leq 50.0$
F	$> 80.0$	$> 50.0$

\* in seconds

Source: 2000 Highway Capacity Manual

The location of all existing signalized intersections in the City of Northampton is shown in Figure 6-5.

A basic assumption in assigning a value for LOS at an intersection is that vehicles stopped at a signalized intersection are willing to accept longer delays. The procedure for determining the LOS at a signalized intersection is based on the control delay per vehicle for a 15-minute analysis period. Control delay is defined as the total time in seconds from the time a vehicle stops at the end of a queue to the time that same vehicle depart from the stop line.

At an unsignalized intersection, LOS is determined by the average control delay. The basic assumption at an unsignalized intersection is that through moving traffic on the major street is not hindered by other movements. In reality, as minor street delays increase, vehicles are more likely to accept smaller gaps in the traffic stream causing through moving vehicles to reduce speed and suffer some delay. The left turn movement off the minor street approach is the most heavily opposed movement and typically suffers the greatest delay.



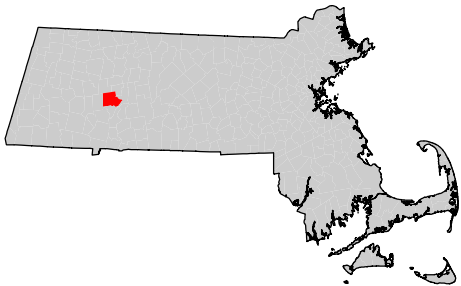
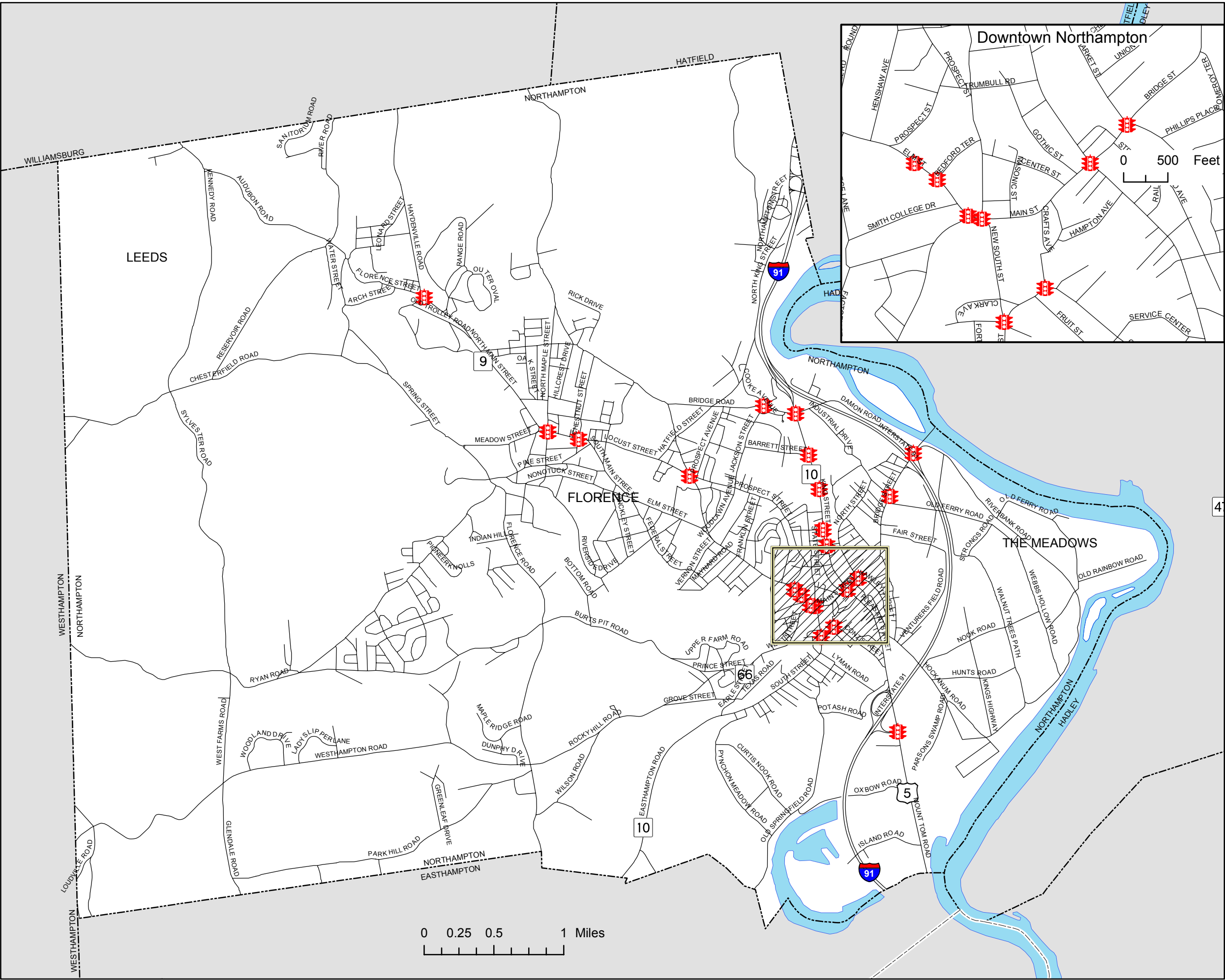
Figure 6-5

Northampton, Massachusetts

# Traffic Signal Locations

## Legend

 Traffic Signals







Level of Service information was summarized for intersections located throughout the City based on local technical assistance studies performed by the PVPC and through the research of recent traffic studies performed in the City of Northampton by private consulting firms. Table 6-5 and 6-6 summarize the intersections for which data was available that were found to be operating at an unacceptable LOS.

**Table 6-5 - Intersections Currently Operating at LOS F**

<b>Intersection</b>	<b>Time Period</b>	<b>Year</b>
King Street with Super Stop and Shop	PM Peak	2000
Route 9 at Route 10 and Route 66	Both	1996
Damon Road at Industrial Drive	Both	1997
Route 9 at I-91 SB on ramp	AM Peak	1997
King Street at Burger King and Firestone	PM Peak	1996
North Main Street at Bridge Road	Both	1999

**Table 6-6 - Intersections Currently Operating at LOS E**

<b>Intersection</b>	<b>Time Period</b>	<b>Year</b>
King Street at Barrett Street	AM Peak	1998
South Street at Earl Street	Both	1996
Damon Road at King Street	AM Peak	1997
Damon Road at River Run	PM Peak	1997
King Street at Hill & Dale Mall	PM Peak	1996

A total of six intersection were analyzed to operate at LOS “F” during at least one peak time period.

## 6.6 Bicycle

Existing roads provide cyclists with the most direct connections from origin to destination, just as they do for motorists. In the past, a method for evaluating roadways either did not exist or relied on the opinions of local bicyclists. While bicyclists have proven to be skilled at assessing the relative safety of traffic and roadway conditions they encounter, their assessment is largely subjective, i.e. “the road has little shoulder”, “traffic is heavy”, “it’s dangerous”. Relying on individual assessments creates a large margin for error, can be time consuming, and may not provide a clear course of action. The Bicycle Level of Service model is designed to overcome these limitations and allows local officials to assess existing conditions and identify future highway improvements. The

Bicycle Level of Service (BLOS) model defines a bicyclist perception of traffic conditions and a road's geometry in a "A" through "F" level of service score ("F" as the lowest rating).

To calibrate the BLOS, bicyclists from across the Pioneer Valley Region participated in a two-month survey evaluating of over 900 miles of roadway in 1997. The cyclists evaluated roads on the routes they travel most often as well as those roads they intentionally avoid. Participants were asked to identify deficiencies including; narrow widths, heavy traffic volume, high speeds, or poor pavement conditions. Also identified were favored routes, those that were characterized as direct or having low motor vehicle volumes, scenic qualities, or particularly pleasant to ride. The information was tabulated and route evaluations were collected on a base map. The evaluations were then correlated with objective data collected from the Regional Pavement Management System (PMS) database, the MassHighway Roadway Inventory File, and Pioneer Valley's Region Traffic Count Program. Significant variables were identified and assigned coefficients to obtain a correlation with the bicyclist's assessment. Variables selected include: traffic volume, roadway width, travel speed, pavement condition, and conflicting traffic movements along the roadway segment. The variables and their coefficients create the BLOS model and are defined in an equation.

Bicycle Level of Service (BLOS) Equation;

$$\text{BLOS} = a_1 \ln(\text{vol}_{15}/L) + a_2 \ln(\text{SPD}) + a_3 \ln(\text{COM15}) + a_4 (\text{PC5})^{-2} - a_5 (W_e)^2 - C$$

Coefficients:

$a_1 = .607$  (Volume)

$a_2 = .901$  (Speed)

$a_3 = .019$  (Commercial Development)

$a_4 = 6.51$  (Pavement Condition)

$a_5 = .005$  (Roadway Width)

**Table 6-7 - Definition of Variables**

Variable	Definition	Baseline Inputs
Vol <sub>15</sub>	Outside lane volume in 15 minute = period during peak period. Assume directional split of .50, peak hour factor of 1.0, peak to daily factor of .10	12,000 vehicle per day
L	Number of travel lanes =	2 travel lanes
W <sub>e</sub>	width of the travel lane (including = shoulder)	12 foot travel lane (including shoulder)
SPD	posted speed =	40 mph posted speed
%HV	percent heavy vehicles = (this data was not collected)	2 percent heavy vehicles
PC	pavement condition = (from PCI index)	80 (good pavement condition)
COM15	% commercial development = 1.0 = high .10 = medium .01 = low	10 % com dev. (medium)
C	constant =	-1.833
CCF	curb cut frequency = 60/ quarter mile = high 12/ quarter mile = medium 1/ quarter mile = low , medium, low)	12 curb cuts per 1/4 mile
ln	natural log =	

**Table 6-8 - BLOS Score**

<b>BLOS Grade</b>	<b>BLOS Score</b>
A	< 1.5
B	< 2.5
C	< 3.5
D	< 4.5
E	< 5.5
F	> 5.5

The Bicycle Level of Service (BLOS) evaluation was applied to roadways in Northampton, Massachusetts with the goal of evaluating roadway conditions. These evaluations will serve as a resource to local planning officials in identifying roadway improvement projects that could improve conditions for bicycling in the community. Information on the BLOS rating for all federal-aid eligible roadways in the City of Northampton is shown in Figure 6-6.

The BLOS evaluation of the Northampton roadway network is provided in the Appendix to this document. Roadway segments are identified by their score on the accompanying map. Conditions on roadways with BLOS scores below level “C” would be considered roadways that experienced bicyclist avoid, while level of service “A” roads appeal to a broad range skill levels. Neighborhood streets were not included in the evaluation. Most neighborhood streets in Northampton would be classified as level of service “A” due to the low volume/low speed nature of the traffic flows on these roads.

The BLOS is a useful tool for evaluating local conditions for bicycling. By using the model in a “what if” scenario local officials can assess the impact of proposed improvements. Changes to shoulder width, resurfacing, or striping can be readily assessed. Routes with high potential for bicycling, including those connecting schools, recreation areas, and public buildings can be evaluated and prioritize for improvements. As a planning tool the BLOS model is an easy to use resource for managing transportation resources efficiently.

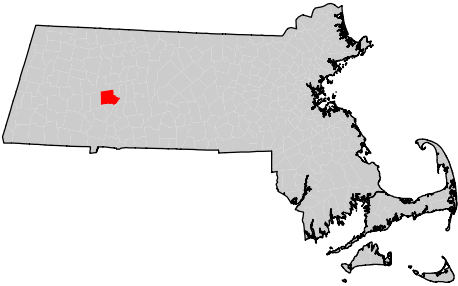
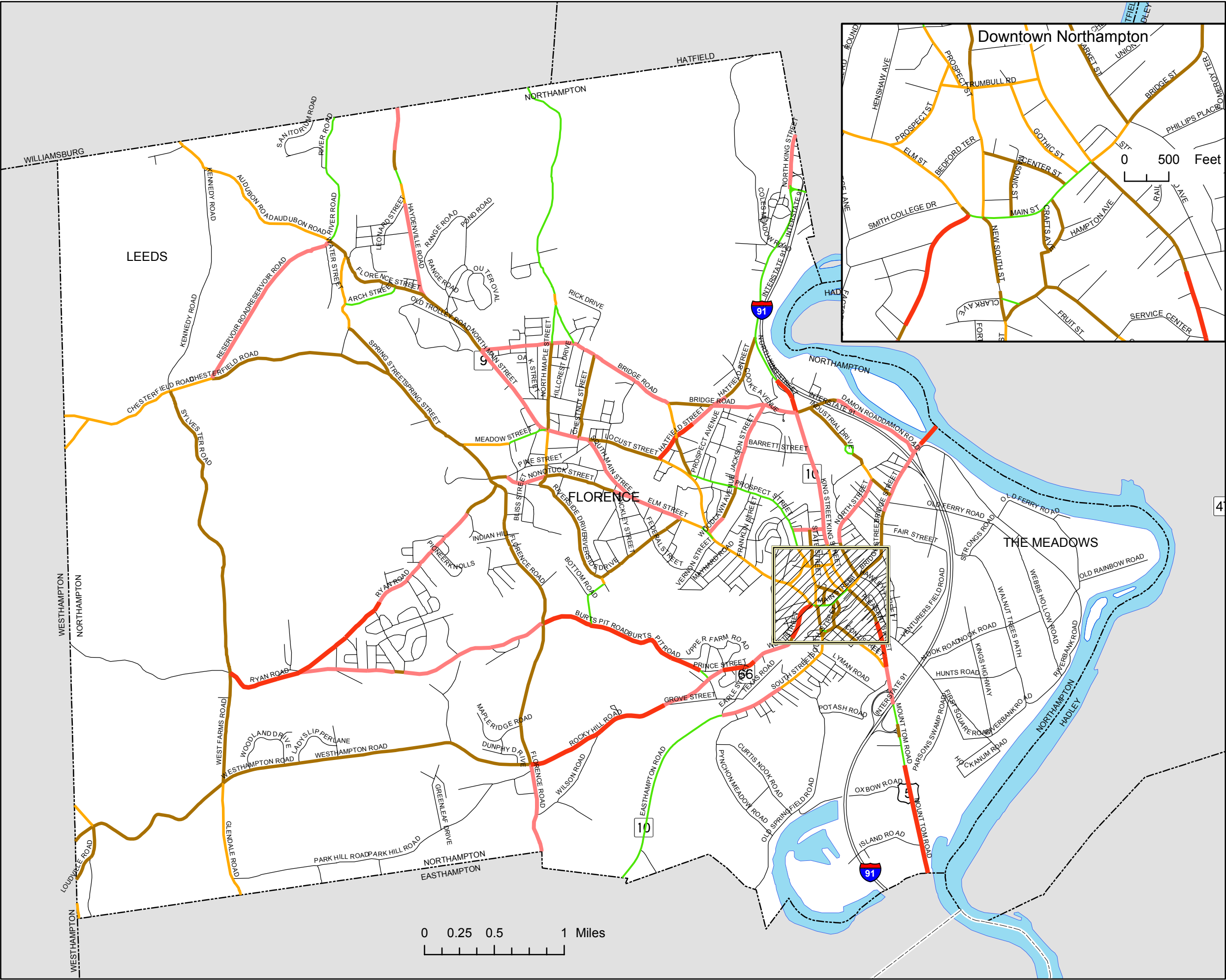
Figure 6-6

Northampton, Massachusetts

# Bicycle Level of Service

## Legend

- Level of Service (LOS)
- A
  - B
  - C
  - D
  - E





## 6.7 Transit

### a. Transit Services

The Pioneer Valley Transit Authority (PVTA) operates a fleet of 167 buses, all of which are wheel chair equipped.

Comprehensive transit service is provided on a network of 45 fixed routes and 5 community shuttles in the regions major urban centers, as well as outlying suburban areas. The PVTA was formed by its member municipalities on August 20, 1974 with the purpose of rebuilding and expanding the region's transit fleet and services. Today, the PVTA offers cost-effective service to the members of its 24 cities and towns, 22 located in Hampden and Hampshire County and two in Franklin County.

The communities that compose the PVTA district can be divided into two basic areas: the northern tier and the southern tier. The northern tier is composed of the communities of Amherst, Belchertown, Easthampton, Hadley, Leverett, Northampton, Pelham, Sunderland, Ware, and Williamsburg. The southern tier may be divided into an urban core, composed of Springfield, Chicopee, and Holyoke, and a suburban area composed of Agawam, East Longmeadow, Granby, Hampden, Longmeadow, Ludlow, Palmer, South Hadley, West Springfield, Westfield, and Wilbraham.

PVTA has three different fixed route operators. Service operated by Transit Express utilizes 127 buses. Service operated by UMASS Transit utilizes 40 buses. Hulmes transportation operates 4 different community shuttles. The entire fleet is less than 10 years old thanks to a capital improvement grant to the PVTA.

The PVTA's 45-route network of fixed routes and 5 community shuttles provides comprehensive service in the regions major urban centers, as well as outlying suburban areas. Route headways and hours of operation are revised as needed in response to ridership patterns and service requests.

PVTA's fixed-route fare structure is set up based on zones, with a base fare for the first zone and an extra charge for subsequent zones. The length of these zones varies from route to route. Transfers, when issued, are at no charge to the passengers. The adult base fare was raised in 1990 to 65 cents

and it was increased to 75 cents in 1997. The PVRTA also has reduced fare programs for the elderly and disabled.

PVRTA's monthly commuter passes are available in four different types according to the zones in the fare structure. The elderly and disabled qualify for half fare one-zone passes at a cost of \$13.00. The cost of a multi-zone pass for the elderly and or disabled is \$18.00. The cost of a standard one-zone pass is \$27.00. The cost of a standard multi-zone pass is \$36.00.

With a few exceptions, routes operated by UMASS Transit operate fare-free during the school year. The University of Massachusetts, Five Colleges Inc., and the Town of Amherst subsidize the cost of this service. Route B44, serving several low and moderate-income housing projects and downtown Northampton, operates with a 25-cent fare.

#### **b. Transit Routes in the City of Northampton**

The Pioneer Valley Transit Authority provides service to the Northampton with 6 different fixed bus routes. The six routes radiate out from the center of Northampton in all directions. The bus stop at the academy of music serves as the hub of the various spokes and allows timed transfers among the different routes.



Figure 6-7 - PVRTA Fixed Transit Routes in the City of Northampton



**Orange 38 Mount Holyoke/Hampshire/Amherst/UMASS**

The Mount Holyoke College bus route (Route 38) travels to and from the University of Massachusetts in Amherst via route 116 to Mount Holyoke College in South Hadley, servicing Amherst College and Hampshire College along the way. In addition to

bus stops at the four colleges there are additional stops placed along the entire route from Amherst through Granby to South Hadley, including stops located at Atkins Farm a local and popular farm stand and the Notch Visitor's Center.

This route is operated by UMass Transit and is funded in part by Five College Inc., to support academic exchanges between the five colleges. Service is only provided during the fall and spring semesters and the winter intercession. This route provides headways<sup>2</sup> of 30 minutes throughout the day. There is no fare collected on this route.

#### **Route Maroon 40 Northampton – Amherst (Minuteman Express)**

Route M40 connects Northampton and Amherst via Route 9 on an express alignment. Stops are limited to Smith College, Academy of Music, Northampton Post Office, Sheldon Field, and Haigis Mall at UMASS. It operates Monday through Friday during the school year. No fare is collected on this route during the fall and spring semesters. Fare is collected during the summer.

Headways vary on this route from 30 minutes in the morning to 50 to 60 minutes during midday and 30 minutes in the afternoon and evening.

#### **Route Red 41 Northampton – Easthampton – Holyoke Community College**

Route R41 connects Northampton and Easthampton via South Street and Easthampton Road (Route 10). From Easthampton the route continues to Holyoke Community College via Route 141. Three weekdays and all Saturday trips detour to provide local service in Easthampton on Ferry and Parsons Streets.

In downtown Northampton, Route R41 makes a clockwise terminus loop. Transfers with other Northampton based routes (M40, R42, B43, R44, and B48) can be made on Main Street.

Route Red 41 provides headways of approximately 70 minutes and requires a full fare.

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<sup>2</sup> Headway refers to the elapsed time between buses along a route.

### **Route Red 42 Northampton – Williamsburg**

The route connects Northampton with the Veteran Administration Hospital and Williamsburg via Route 9. It provides local service within Northampton including the Florence and Leeds sections of town. Route R41 also provides service to the Haydenville and Williamsburg Center sections of Williamsburg. Transfers with the other Northampton-based routes can be made on Main Street in downtown Northampton.

Route Red 42 provides headways of approximately 60 minutes and requires a full fare.

### **Route Blue 43 Northampton – Amherst**

Route B43's alignment is primarily along Route 9 and provides service to downtown Northampton and the town of Hadley. Route B43 also provides direct, curbside service to Hampshire Mall in Hadley.

Route B43 provides frequent headways during the school year. It runs every ten minutes during the day and scales back to a 60-minute frequency at night. Headways range from 40 to 60 minutes on school period Saturdays. During the non-school and summer periods, a 30-minute daytime and 60-minute nighttime headway is operated on weekdays. Sixty-minute daytime and nighttime service is operated on Saturday and Sunday during non-school and summer periods.

Route B43 is funded in part by Five College Inc., to support academic exchanges between the five colleges. It operates fare free during the school year but during the summer months a full fare is charged.

### **Route Red 44 Florence Heights via King St. & Bridge Rd.**

The Red 44 departs Thorne's Market in Northampton seven days a week. It services north King St, Hampden Gardens, Hampshire Heights, and the Hampshire Plaza Mall area. It then goes to Florence Heights Apartments serving Meadowbrook Apartments, Forsander Apartments, Florence Center and the Florence Senior Center. The bus returns to Northampton on a similar route (skipping Forsander

Apartments) where it services north Pleasant Street and the Salvo House prior to returning to Thorne's market. The regular fare is twenty-five cents. The headways vary on this route from 60 minutes in the morning to 70 minutes in the afternoon and evening during the week. On Saturdays and Sundays the headways are approximately 70 minutes all day.

#### **Route B48 Northampton – Veterans' Park/Holyoke Mall**

This route serves Veterans Park in Holyoke departing from Thorne's Market in Northampton via route 5 and Lincoln Street (Route 202) seven days a week. This route provides headways of 60 minutes on both weekdays and Saturdays. Connections to the Springfield bus routes may be made at Veterans Park.

Route B48 requires a full fare. An additional zone fare is charged if the passenger is transported beyond the Easthampton City Line on Route 5 in either direction.

#### **FRTA Valley Route**

The Franklin Regional Transit Authority also has a route serving the Northampton area that connects with PVRTA services at the Academy of Music. The FRTA Valley Route operates in the Connecticut River Valley along Routes 5 and 10 between Greenfield and Northampton. It makes four round trips per day (operating Monday through Friday only) - two in the morning and two in the afternoon. The fare is \$1.00 each way except from Greenfield to Northampton, which is \$1.50 each way.

### **c. PVRTA Para-transit Program (Reserve-a-Ride)**

In addition to its regular fixed route service, the PVRTA provides door-to-door accessible van service to the 24 member communities located in Hampden and Hampshire County and the two member communities in Franklin County. This service is generally available in a wider area than that which is served by the fixed route transit system available to the general public. There are two programs operated under the Reserve-a-Ride program: ADA complementary paratransit and Dial-a-Ride service.

### ADA Complementary Paratransit Service

PVTA provides van service to passengers who are unable to use the bus due to a disability. This form of transportation is complementary to regular bus service in the Pioneer Valley. Passengers must complete PVTA's ADA application to be eligible for ADA van service. Once certified, passengers receive service according to the following requirements:

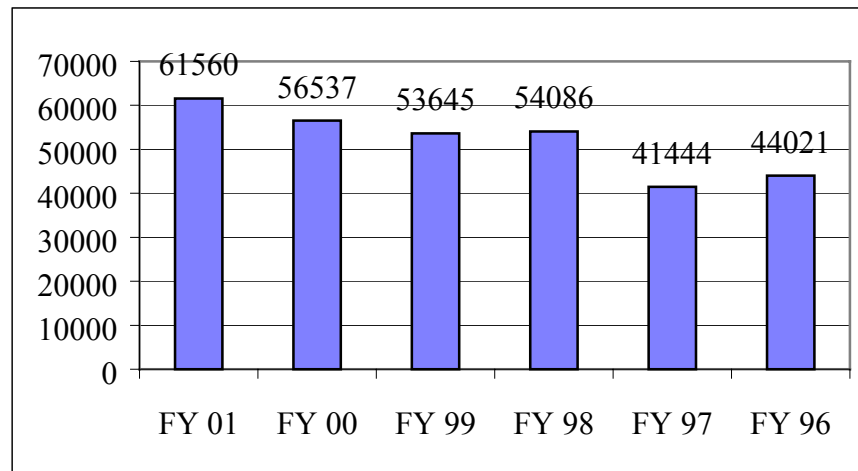
- Trips can be scheduled the day before the trip is needed
- Service is provided on the same days and during the same hours as regular bus service in the area.
- In order for a trip to be ADA eligible each trip must fall within  $\frac{3}{4}$  of a mile of existing bus service.

### Dial-A-Ride Service

PVTA also provides van service to individuals over the age of 60 throughout the 24 communities. The service is operated on a space available basis and operates Monday through Friday 8:00 AM to 4:30 PM.

PVTA Northern Tier provides door-to-door accessible van service to the PVTA member communities of Amherst, Hadley, Northampton, Easthampton, Leverett, Pelham, Sunderland, and Williamsburg. Their operation is based out of the Northampton Bus Facility. The contractor for this service is Hulmes Transportation Inc. Their telephone number is 413-586-3336. Fares for the Reserve-a-Ride program are 50 cents one way in town, \$1.00 one way out of town, and \$1.50 one way for out of county.

**Figure 6-8 - PVRTA Northern Tier Para-Transit Ridership**



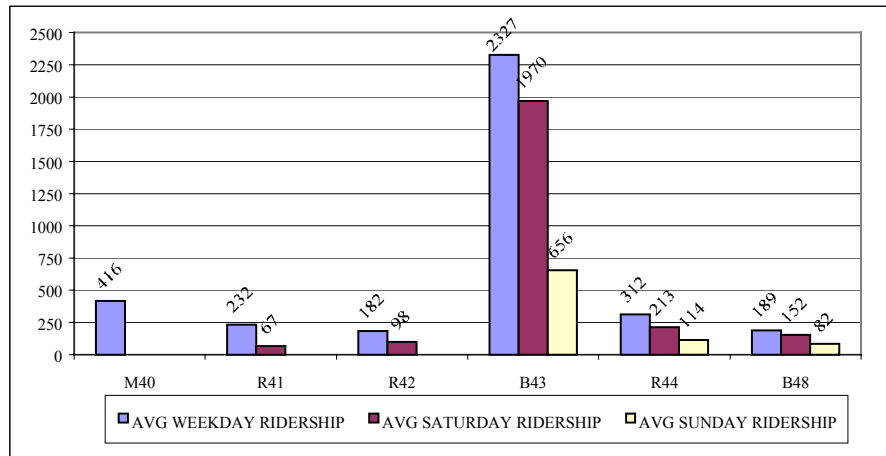
**d. Ridership Survey**

On Wednesday April 25, and Saturday April 28<sup>th</sup>, 2001 the PVPC conducted a comprehensive ridership survey of the PVRTA's Northampton based routes. Approximately 70% of the trips for the Maroon 40 (M40) and Blue 43 (B43) were surveyed on Wednesday and 100% of the trips were surveyed on all other routes. On Saturday nearly 100% of all trips were surveyed for all routes.

Information regarding boarding and debording counts per stop, formal passenger inquiry about age, frequency, trip purpose, quality of service and schedule adherence was carefully collected. The findings show that work, shopping, and college accounted for nearly 80% of all trips. Approximately 75% of all riders *do not* own an automobile, and for the most part, the riders of the Northampton Based routes are very satisfied with the level of service they receive.

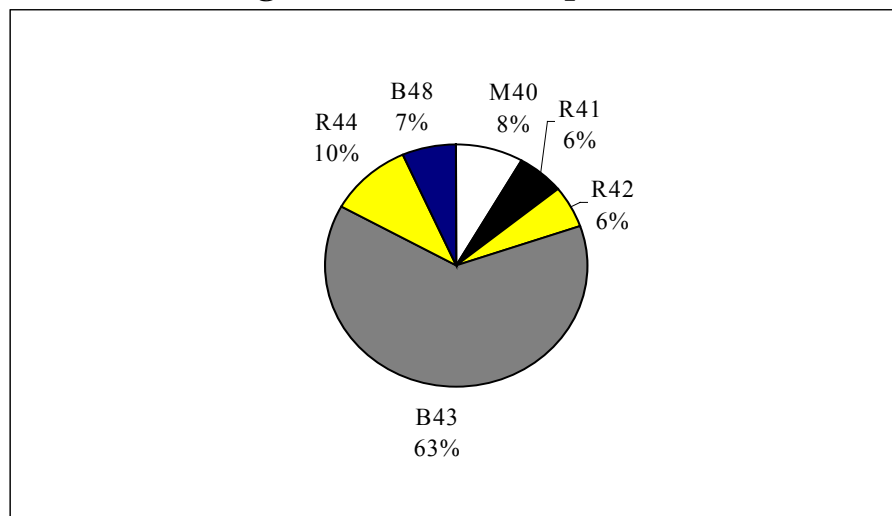
Figure 6-9 shows the average daily ridership for each of the Northampton routes. The month of April 2001 is used as an average month because all schools are in session and it corresponds with the time of the survey.

**Figure 6-9 - Average Daily Ridership**



The Blue 43 route by far has the largest daily ridership total of the six routes surveyed. This route provides service along Route 9 from downtown Northampton to the University of Massachusetts. Route Blue 43 accounts for 63% of all transit riders on the six Northampton based bus routes as shown in Figure 6-10.

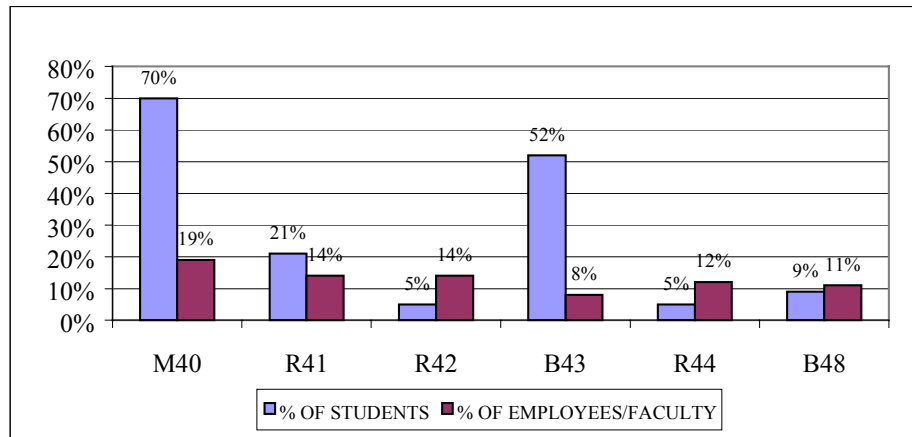
**Figure 6-10 - Ridership Breakdown**



Source: PVTa

All riders were asked if they were affiliated with a college or university. Figure 6-11 shows the breakdown of students as opposed to faculty and other college/university employees.

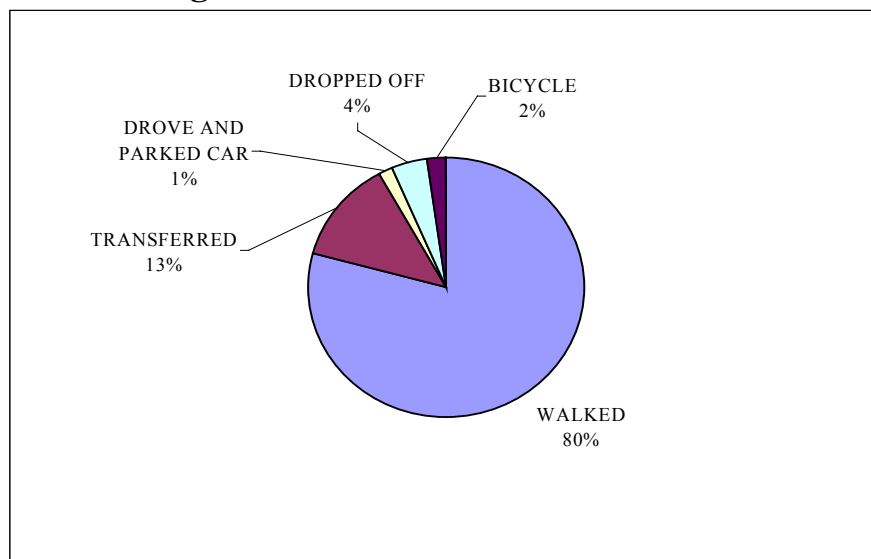
**Figure 6-11 - College Student/Faculty By Route**



Students far outnumber employees on the two UMass routes (M40 and B43) however, more employees ride routes Red 42, Red 44 and Blue 48. This is partially indicative of the locations these routes but could be a positive sign that measures implemented by the Route 9 Transportation Management Association are beginning to take effect.

Nearly 80% of all riders surveyed walk to the bus. While 75% of all riders did report they do not own a car, only 5% of all riders reported using a car to access their bus stop. This information is summarized in Figure 6-12.

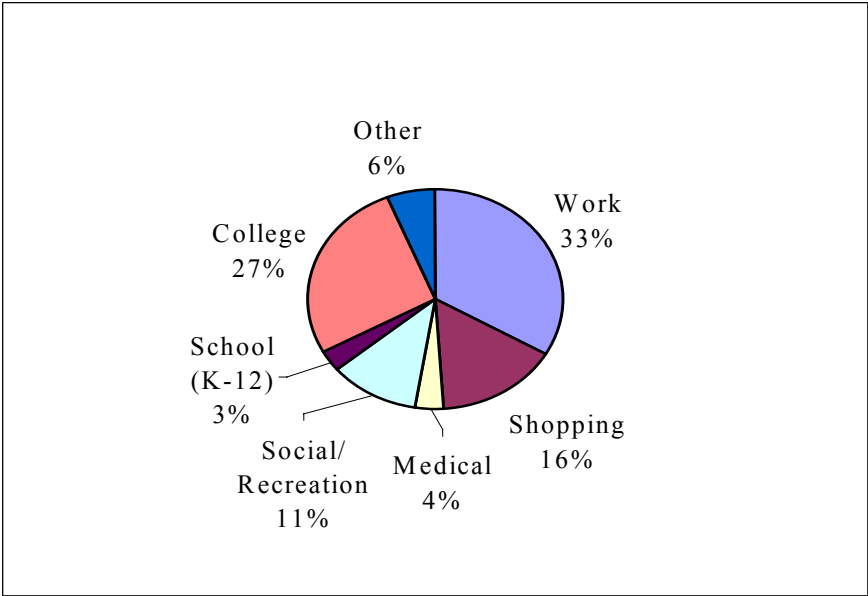
**Figure 6-12 – How Did You Get to the Bus?**





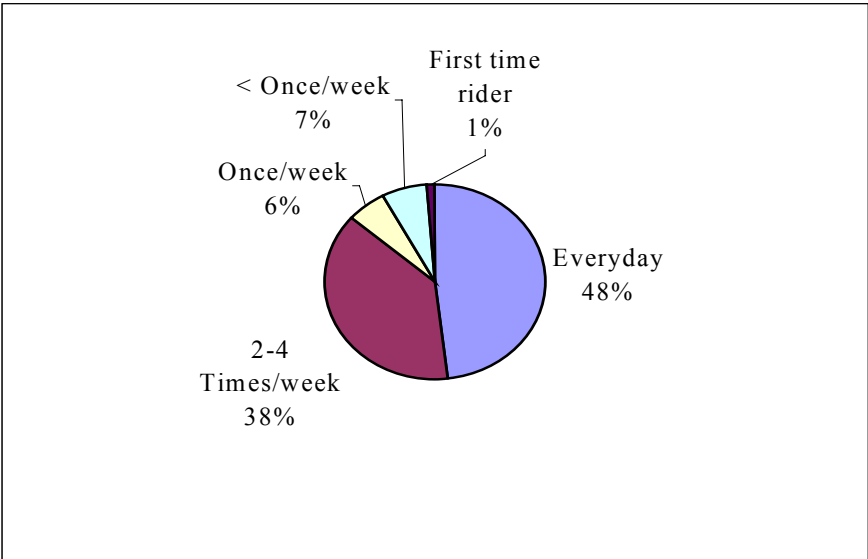
Most riders are currently using the existing bus system to travel to work or school. Over 25% of all trips were reported to be for recreational or shopping purposes. A summary of the breakdown of transit trip purposes is shown on Figure 6-13.

Figure 6-13 – Trip Purpose



Nearly half of all riders reported they ride the bus everyday. Conversely, 1% of all riders reported this was their first time using the PVTa. The high ridership frequencies are due to the high captive ridership rate, and the free transit service on most routes.

Figure 6-14 – Frequency of Ridership



#### **e. Comparison of Customer Satisfaction Indicators**

Passengers on each route were surveyed about their level of satisfaction with different components of PVRTA's service. For the purposes of this survey it was determined that a threshold of 90% satisfaction was an acceptable level of customer satisfaction with a 95% being very good. Responses to these indicators should assist PVRTA in targeting areas to improve in customer satisfaction.

##### **Passenger Information**

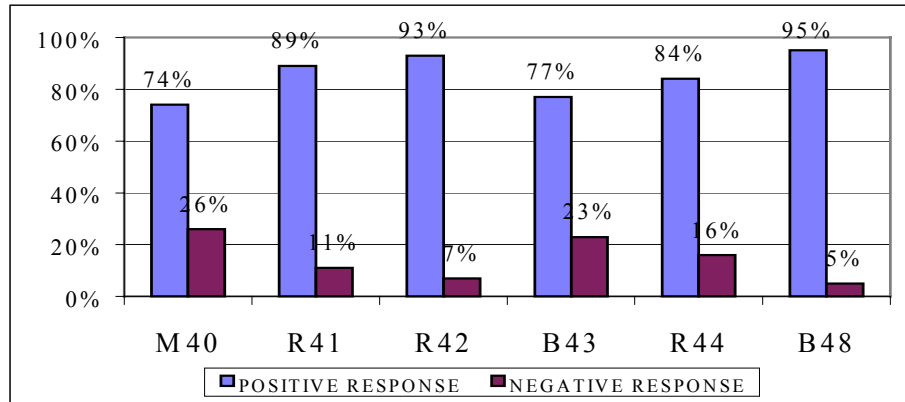
The printed passenger schedules are the main point of contact to provide passengers with information about PVRTA services. It is critical that passengers can easily obtain schedules as well as understand them. Over 90% of Passengers indicated in the survey that they were able to get schedules and clearly understand them.

##### **Condition of Bus Shelters**

Well-maintained and attractive bus shelters are important to PVRTA to provide a safe and protected area to wait for the bus at heavily used stops. Damaged and vandalized shelters present a poor image for PVRTA as well as contribute to a sense of insecurity while waiting for a bus.

Passenger satisfaction with the condition of the bus shelters varies greatly between routes. Passengers using the B43 and M40 indicated high levels of dissatisfaction. Again, these routes constitute the two most heavily traveled routes in the system. Bus shelters are few and far between in the Northampton area. In addition, some shelters were found to be in a state of disrepair, and many were covered with flyers and graffiti. These survey results indicate an opportunity to improve customer satisfaction by improving bus stop conditions.

**Figure 6-15 - Condition of Bus Shelters**



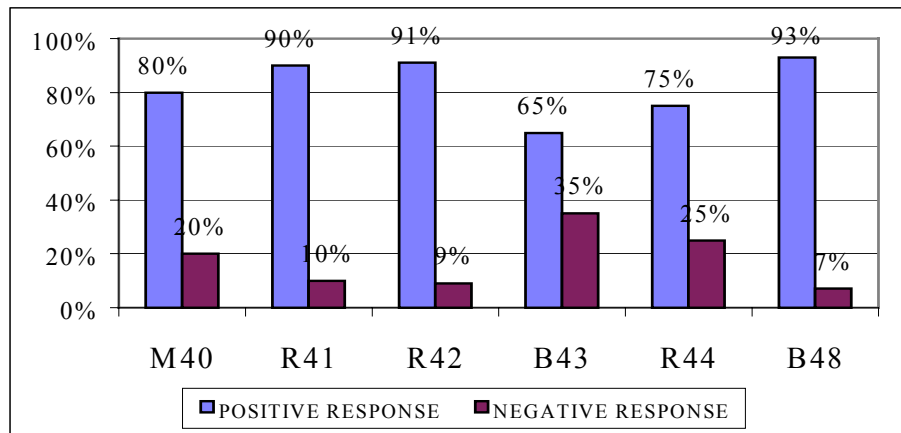
**f. Service Issues**

**On-time Performance**

On-Time performance varied from route to route during the survey. Only 3% of the M40 trips were recorded to be late, yet passengers gave it a 20% negative response. The R41 had 23% of its trips late but received only a 10% negative response. The R42 and B48 routes had acceptable levels of satisfaction and typically do not experience on time performance issues. On the other hand, B43 and R44, two routes with known performance issues had predictably low customer satisfaction with on-time performance. The B43 had 17% of trips late with a 65% level of satisfaction while the R44 had 44% of its trips late with a 75% level of satisfaction.

It is important to note that a bus is considered “on-time” even if it arrives at its scheduled stop up to 5 minutes after it is scheduled. A summary of the results of the on-time performance question is presented in Figure 6-16.

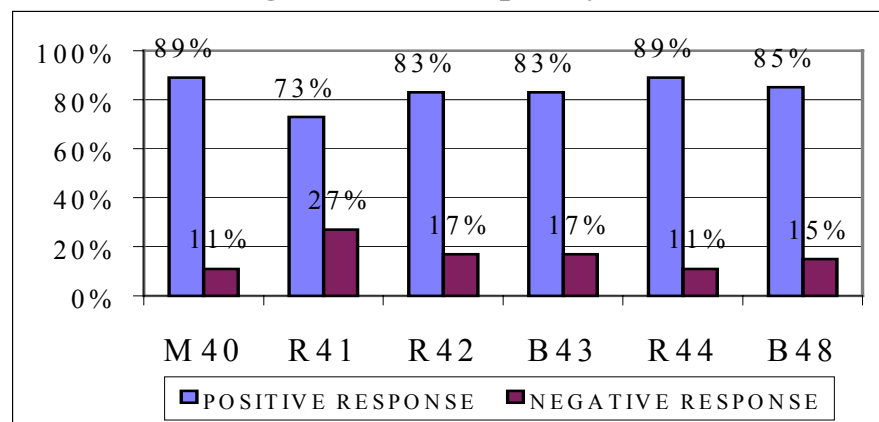
**Figure 6-16 - Buses Running On-Time**



### Frequency of Service

Passengers' satisfaction with the frequency of service did not reach acceptable levels for any of the routes. Service levels are determined by ridership levels and these results may indicate a disconnect between desire for service and number of potential passengers. This information is summarized on Figure 6-17.

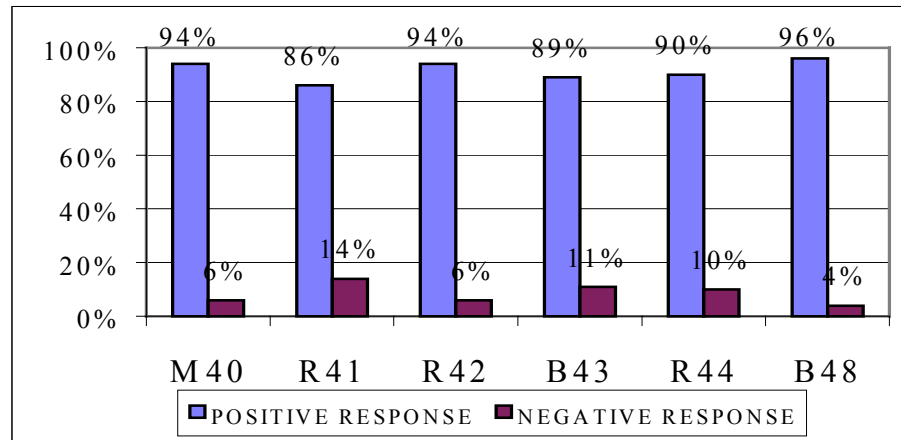
**Figure 6-17 - Frequency of Service**



### Service Where Desired

Passengers were asked if they were satisfied that PVRTA serviced the areas they wanted to go. The lower ratings of the R41 and B43 indicate the need for further study in this area. We need to find out which areas if any are not currently being serviced by PVRTA and possibly make changes to the routes.

**Figure 6-18 - Service Where Desired**



### **Bus Stop Conditions**

An inventory of bus stop amenities was performed as a part of this survey. Among the many items we looked for are bus stop signs, benches, shelters, newspapers, and telephones. In general, even the most rudimentary amenities are not present at bus stops in the Northampton system. The most common attributes present for bus stops in the Northampton system are bus stop signs, curbing, and sidewalks. In many cases bus stop signs are not present. Bus shelters are provided at the beginning and end of routes. Many bus shelters are defaced with handbills and graffiti.

## **6.8 Pavement**

A Pavement Management System (PMS) is a systematic process that collects and analyzes roadway pavement information for use in selecting cost-effective strategies for providing and maintaining pavements in a serviceable condition. The PVPC collects information on the condition of all federal-aid eligible roadways in the Pioneer Valley region.

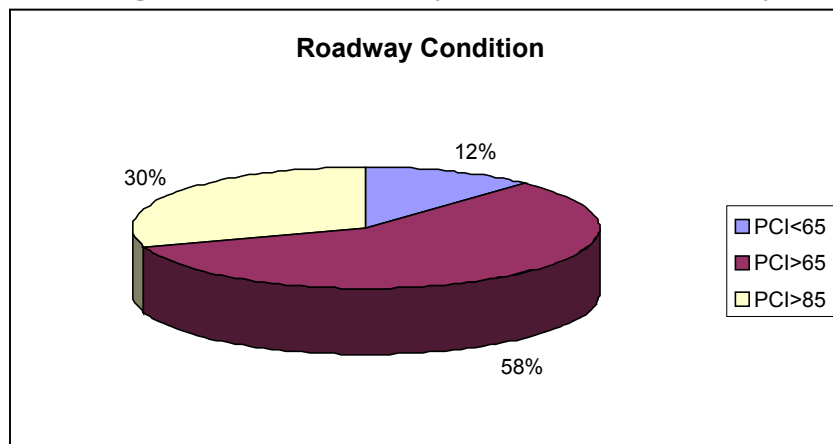
The role of PMS is to provide an opportunity to improve roadway conditions, and make cost-effective decisions on maintenance priorities and schedules. To conduct pavement data collection, the PVPC utilized the Road Manager software developed by Vanasse Hangen Brustlin, Inc.

**a. Pavement Condition Index (PCI)**

In the summer of 2001, the PVPC staff surveyed 64.34 miles of Federal Aid eligible roadways in the City of Northampton corridor that was divided into 172 roadway segments. The State Road Inventory (SRI) file, a computerized database containing information on all roadways in the state, was used in establishing roadway segments. The Massachusetts Highway Department collects pavement distress information for the Interstate Highway System.

The average PCI for the surveyed roadways in Northampton is rated at 73, which indicates that majority of the roadways are in a fair condition. The PCI generated by the Road Manager was used to establish pavement condition categories of “Good”, “Fair”, and “Poor” with PCI ranges of greater than 85, between 65 and 85, and less than 65 respectively. The results indicate that Northampton’s surveyed federal-aid eligible roadways are broken down as follows: 30% of the roadways are in good to excellent condition, 58% are in fair condition, and 12% are in poor condition. This information is shown on Figure 6-19.

**Figure 6-19 - Roadway Condition Summary**



The PCI for all federal-aid eligible roadways in the City of Northampton is shown on Figure 6-20.

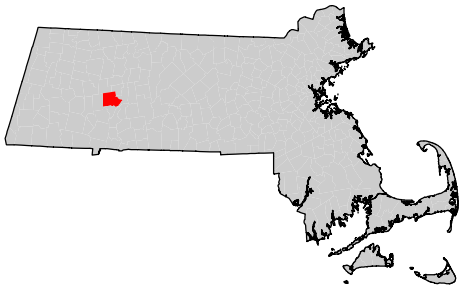
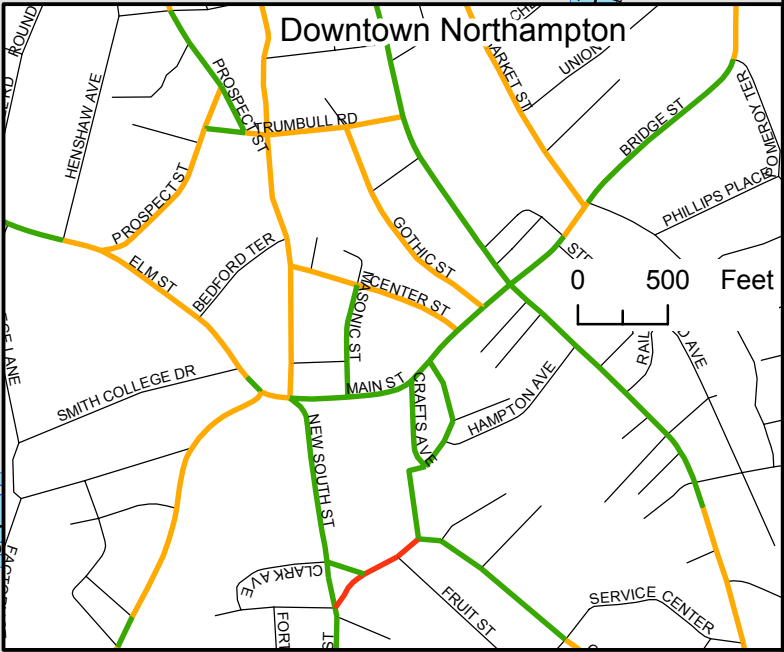
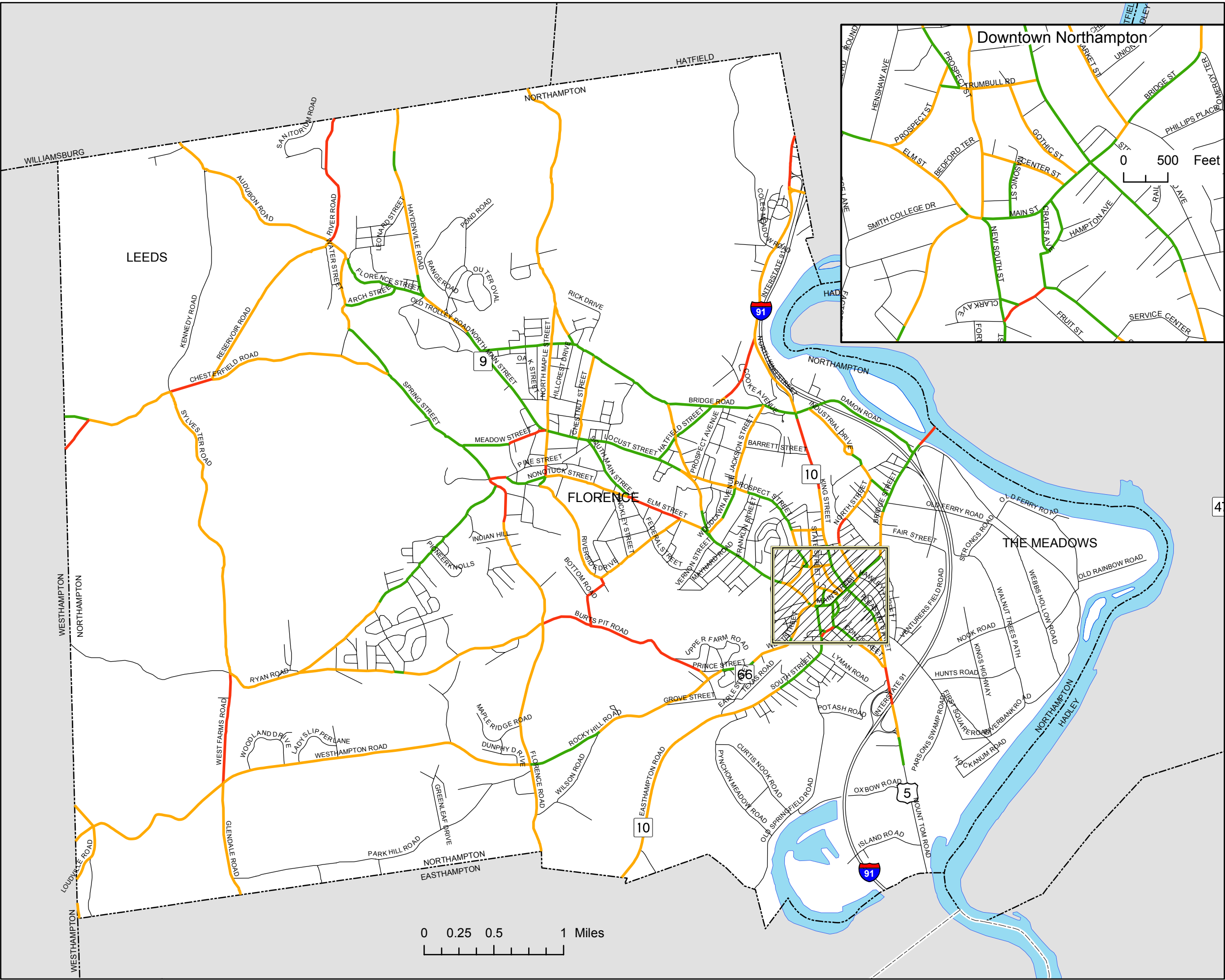
Figure 6-20

Northampton, Massachusetts

# Pavement Condition Index (PCI) Federal Aid Roadways

## Legend

- POOR (PCI < 65)
- FAIR (PCI 65-85)
- GOOD (PCI > 85)







## 6.9 Parking

A comprehensive parking study was recently completed for Downtown Northampton by a private consulting firm. This study including an inventory of the on and off-street parking supply, parking counts, and recommendations to improve short and long term parking problems.

A summary assessment of seven candidate sites for potential future parking structures was a focal point of the study. Each site was evaluated on its ability to be cost efficient, provide up to 200 new parking spaces, and provide safe, efficient vehicle and pedestrian access. The two preferred alternatives for a future parking garage include the redevelopment of the existing Police Department (assuming the Police Department moves to a new location), and the development of a public/private partnership with the Hotel Northampton to incorporate public parking into any future expansion plans by the hotel.

Preliminary recommendations from the Central Business District Parking Needs Study are summarized below.

- Long-term parking needs for properties along Main Street west of King Street should be accommodated by the John Gare Garage or the Roundhouse Lot.
- Reduce the need for parking spaces by minimizing parking demand and efficiently using the existing parking supply.
- Consider charging market-rates for municipal employee parking permits for the Roundhouse lot and Hampden Avenue/Old South Street lot.
- Provide preferential parking for carpools in the John Gare Garage.
- Review parking fees regularly to ensure that low fees do not encourage unnecessary trips or require parking subsidies.
- Consider allowing parking at night and on weekends in the James House Lot.
- Make more efficient use of roof level parking in the John Gare Garage.

### a. Park and Ride

The City of Northampton received funding from the Massachusetts Highway Department under the Transportation Demand Management (TDM) program to construct an 81 space

park and ride lot off of Route 9 at Sheldon Field. The project is expected to work in conjunction with other existing services in the area including express bus service from Northampton to the University of Massachusetts, and the new rideshare coordinator for the Transportation Management Association for this area. The lot is expected to be ready by the end of the year.

## 6.10 Existing Major Deficiencies

A number of additional areas with existing transportation deficiencies were identified as part of the public participation process. The following section summarizes some of these areas based on comments received on the plan.

<b>Location</b>	<b>Problem</b>
Bridge Road/Damon Road/King Street Intersection	Congestion
Bridge Street/I-91 Exit 19 Intersection	Congestion/safety
Main St./Elm St./West St./New South St. Intersection	Congestion
Easthampton Road/Earle Street Intersection	Alignment
Earle Street/Grove Street Intersection	Alignment
Bridge Road/North Maple Street Intersection	Safety
Route 9/Bridge Road Intersection	Congestion
Bridge Street/Old Ferry Road Intersection	Congestion
Main Street at the Railroad Overpass	Low Clearance
Route 5/Pleasant Street/Conz Street Intersection	Alignment
Route 5/Pleasant Street/Hockanum Road Intersection	Alignment

# 7.

## Future Conditions

It is important to consider the impact of the existing transportation system and regulations on future traffic conditions. Zoning regulations may permit large retail developments in primarily residential areas. Site specific developments can be expected to increase traffic volumes in surrounding areas. Growth in surrounding communities can also result in an increase in commuter traffic through Northampton. Many potential future deficiencies and problem areas can be eliminated by identifying the problem before it happens.

### 7.1 Planned Transportation Improvements

Transportation improvement projects should be coordinated to minimize the impact on surrounding residents and business. The PVPC maintains the Transportation Improvement Program (TIP) for the region. The TIP lists all proposed transportation improvement projects in the Pioneer Valley region over a six-year timeframe. All federally and state funded projects appear in the TIP.

In addition, many projects are constructed using Chapter 90 Funds, grant money, and with local funds. The PVPC met with the Northampton Department of Public Works to determine which transportation projects are proposed to be completed in the future. A summary of all proposed transportation improvement projects in the city of Northampton is shown on Table 7-1.

**Table 7-1 – Proposed Transportation Improvement Projects**

SID	Project Name	Project Description	TIP Year	Design Status	Total Cost
602886	Manhan Northampton/ Easthampton Rail Trail	Construction: 5 mile bikepath from Old South Street to Ferry St, Easthampton	2006	75%	\$1,500,000
602887	Manhan-Norwottuck Link	Construction of bikepath from Old South to State Street	2006	75%	
602647	Bridge Rd. & N. Maple St.	Improvement: signalization	2004	95%	\$175,000
602885	Look Park Bikepath Extension	Look Park Bikepath Extension to Williamsburg Line	2006	75%	\$1,500,000
	Downtown Rail Trail Connector	Construct: State St. to New South St.	2006	25%	\$1,100,000
180525	Damon Road Reconstruction	Reconstruction: Rte. 9 to King St. (Rte. 5) (with Norwottuck Rail Trail Bridge)	2004	50%	\$2,700,000
601180	Norwottuck Trail Damon Rd Extension	Norwottuck-Damon Rd. Bikeway Extension (no tunnels)	2002	100%	\$750,000
119005	Rte. 66	Reconstruction: Rte. 66	2007	90%	\$8,834,237
602538	Bliss Street	Replace BR# N-19-023 over the Mill River	2002	25%	\$1,200,000
603054	Rte. 9 & Bridge Rd.	Improvement: Intersection	2002	0% Not Started	\$300,000
	Route 9 TMA	Route 9 Transp. Management Association			\$50,000
	Signal Upgrade State/Old South/ Rt 9	Upgrade traffic signal at intersection Route 9 & 10		100% Design	
	Route 10/Earl St. intersection	Install: Signal	2001	0% Not Started	\$100,000
	Pedestrian/Bicycle Bridge	Construct: Vernon St. to State Hospital site			\$200,000
	Earl St.	Construction: State hospital property access		25%	\$600,000
	Norwottuck Rail Trail Damon Rd. Ext. Tunnel	Construct Bikepath tunnel under active Railroad at King Street and Woodmont	1999	0% (20% complete)	\$1,100,000
	Northampton St.	Construction: Bridge from Vernon St. to State St.		0	\$200,000
	Ryan Rd.	Reconstruction: W. Farms Rd. to Brookside Circle		0% Not Started	\$1,100,000
	Glendale Rd.	Reconstruction: Rte. 66 to Easthampton TL		0	\$1,000,000
	Business Park Link	Construct: Link w/ Rte. 66 & Rte.10		0% Not Started	\$250,000
601200	Old Springfield Rd.	Replace BR# N-19-068 over Mill River	2001	100%	\$500,000
119006	Rte. 66	Reconstruction: Rte. 66	2007		\$8,834,237
602058	Chesterfield Rd. Bridge	Replace: BR# N-19-033 & approaches	1999	construction started	\$534,926
	Burts Pit Rd.	Reconstruction: Rte. 66 to Florence Rd.		0	\$1,340,000
	Rte. 66 Connector	Construction: Old South St. to Rte. 66		0	\$1,500,000
	Sheldon Field Park and Ride Lot	Construction of a Park and Ride Lot at Sheldon Field	2001	100%	
	Hospital Hill road network	Construct roads to connect Hospital Hill, Rte. 10, Rte. 66 and Earle and Grove Streets		Conceptual	
	Damon Rd /Norwottuck Bike Bridge	Design a Bikepath Bridge for Norwottuck over Damon Road	2002	0%	\$88,000
	Park and Ride Lot	Construction of a Park and Ride Lot in Florence or Leeds		Conceptual	
	Future Rail Trail Connections	Construct various spurs to the Norwottuck and Manhan		Conceptual	

SID = State Identification Number, TIP = Transportation Improvement Program

## **7.2 Future Transportation Planning—E.O. 418**

Four state agencies have joined forces to provide funding for communities to develop community development plans under Executive Order 418 (E.O. 418). These plans require a multi-jurisdictional transportation component. The city of Northampton intends to use this plan as a guide for the E.O. 418 multi-jurisdictional transportation plan.

## **7.3 Estimating Demand for Bicycle Trips in Northampton**

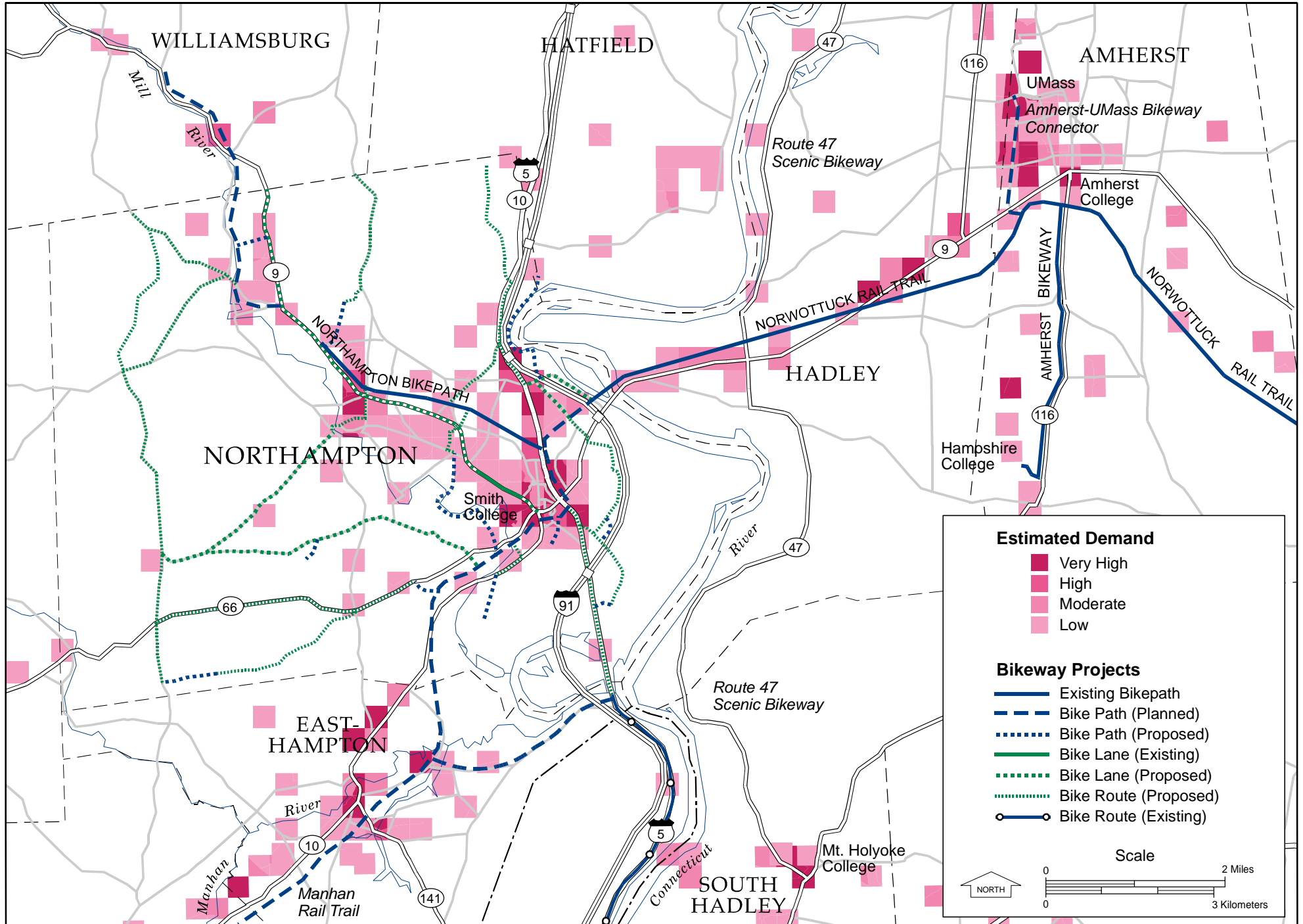
PVPC identified areas with a high potential for bicycle trips using demographic data to quantify the proximity and magnitude of bicycle destinations and population density. This demand model is useful in prioritizing projects and identifying corridors of critical concern.

The premise for the analysis is that short (bicycle) trips are more likely to occur than long trips. The potential for a bicycle trip is also higher in areas where destinations are clustered near where people live, such as town centers, central business districts, and mixed-use developments. The two building blocks of the model are the travel characteristics of the population and the type and quantity of a destination. Only "utilitarian" bicycle trips are included, those trips made for a purpose other than the enjoyment of the trip itself. For example, bicycling to a friend's birthday party is a utilitarian trip, even if the purpose of trip is the enjoyment of the party. A recreational trip however, would be a trip made for solely for the pleasure of the ride, the view, or the experience.

Using geographical information systems, population data for each census block group for the City was used to identify trip generation based upon the proximity, frequency and magnitude of adjacent bicycle trip generators and/or attractions. A trip generation factor of 3.86 trips per day (NPTS) per person was used to estimate total potential trip generation in a 1/4 square mile area. Destinations were identified and their corresponding location was mapped and are shown in Figure 7-1. Information on existing and proposed on and off-road bicycle projects is also included as part of Figure 7-1. A summary of current activities for bicycle projects is presented in Table 7-2.



Figure 7 - 1  
Potential Demand for Northampton Bikeways







**Table 7-2 - Current or Planned Bicycle Related Activity**

<b>Activity</b>	<b>Current Activity</b>	<b>When</b>	<b>By Whom</b>
Bicycle path from edge of downtown to Florence	On-going maintenance	Done	DPW
Bike-on-busses (bike racks on buses)	On-going	Done	PVTA
Bicycle racks installed on downtown streets and in parking garage	Site selection, programming work	< 1 year	DPW installs (racks from PVPC/PVTA)
Park and Ride lot w/8 bicycle lockers at edge of town	Design and acquisition in process, awaiting MHD hearing	2-5 years	City designs, MHD grant and advertising Construction funding to be secured
New rail trails—downtown to existing city and state rail trails and Easthampton Center	Design and acquisition in process, awaiting MHD hearing	2-5 years	City Designs, MHD grant and advertising Construction funding to be secured
System of bike lanes and routes	Conceptual planning	3-10 years	OPD concept, PVPC analysis, DPW implements
Bike path extensions, especially through state hospital	Conceptual planning	5-30 years	OPD concept, future

(excerpt from Northampton Vision 2020 (page 13), 6/10/99

## 7.4 Future Build-Out

In 1999, The Executive Office of Environmental Affairs (EOEA) commissioned a build-out analysis for every community in Massachusetts. The build-out analysis provided a preview of the type and location of the maximum future development that could be expected under current zoning and resource protection bylaws. A copy of the build-out map prepared for Northampton is shown in Figure 7-2. It is important to note that the build-out methodology employed by the state does not adequately consider Northampton's unique environmental limitations, and therefore overestimates potential development in the city. The potential for future development is significant, and the build-out analysis provides useful information for discussion.

Information on Figure 7-2 corresponds to the following legend:

- White areas surrounded by a blue line indicate the present zoning of an undeveloped area.
- Light pink areas represent developed land as of 1990.
- Medium pink areas represent the areas developed since 1990.
- Dark pink areas represent the 27 residential subdivisions since 1985 in the city.



Northampton, Massachusetts



- Orange areas are considered undevelopable lands.
- Dark Green areas are municipally owned lands.
- Light Green areas are permanently protected lands.

In addition to the build-out map, the PVPC also calculated the impact of developing every piece of available land under current regulations on population, demands on public services, and consumption of resources. This information is summarized in Table 7-3.

**Table 7-3 – Impact of Additional Development**

Developable Land Area (Acres)	11,555
Additional Residential Units	8,370
Additional Commercial/Industrial Floor Area (Square	6,862,877
Additional Residential Water Use (Gallons per Day)	1,431,270
Additional Commercial Water Use (Gallons per Day)	514,716
Additional Residential Solid Waste (Tons)	9,790
Additional Students	2,260
Additional Miles of Roadway	100.7

Assumptions:

- Developable lands do not include wetland area acreage.
- Residential Water Use based on average consumption of 75 gallons per day per person.
- Commercial/Industrial Water Use based on average consumption of 75 gallons per day per 1000 square feet of floor area. Industrial water use does not include special manufacturing processes that utilize process water.
- Residential Solid Waste is based on an average generation rate of 1026 lbs. Per person per year. This figure includes recycled and non-recycled solid waste generation.
- Additional Students figure is based on an average of 2.28 persons and 0.27 students per household.
- Additional Road Miles calculated for residential development only.
- In the CB and GB zoning districts, a residential to commercial development ratio of 10/90 was used to calculate totals. In the BP zoning district, a ratio of 15/85 was used to calculate totals.

## 7.5 Future Traffic

Travel demand forecasting is a major step in the transportation planning process. By simulating the current roadway conditions and the travel demand on those roadways, deficiencies in the system are identified. This is an important tool in planning future network enhancements and analyzing currently proposed projects. The Pioneer Valley Planning Commission (PVPC) uses the TransCAD

software to perform transportation forecasts for the 2003, 2010, 2020, and 2025 analysis years.

Travel demand models are developed to simulate actual travel patterns and existing demand conditions. Networks are constructed using current roadway inventory files containing data for each roadway within the network. Travel demand is generated using socioeconomic data such as household size, automobile availability and employment data. Once the existing conditions are evaluated and adjusted to satisfactorily replicate actual travel patterns and vehicle roadway volumes, the model inputs are then altered to project future year conditions.

The preparation of a future year socioeconomic database is the last step in the travel demand forecast process. Forecasts of population and socioeconomic data as well as the attributes affecting travel are used to determine the number of trips that will be made in the future. A summary of proposed future transportation conditions for the 2010 and 2020 analysis years is presented in Table 7-4.

**Table 7-4 – Projected Future Traffic Growth**

<b>Roadway</b>	<b>Location</b>	<b>1997 Volume</b>	<b>2010 Volume</b>	<b>2020 Volume</b>	<b>1997 to 2010 Change</b>	<b>1997 to 2020 Change</b>
Bridge Road	east of North Maple Street	10622	12745	12882	19.99%	21.28%
Bridge Road	east of North Elm Street	4833	5749	5883	18.95%	21.73%
Bridge Road	west of North Elm Street	15425	18566	18964	20.36%	22.94%
Bridge Street	east of Market Street	12075	12890	13146	6.75%	8.87%
Bridge Street	west of Damon Road	23662	27099	28484	14.53%	20.38%
Bridge Street	west of I-91 exit 19	17121	24240	25870	41.58%	51.10%
Burts Pit Road	east of Florence Road	3005	3363	3439	11.91%	14.44%
Burts Pit Road	west of Florence Road	2193	2820	3793	28.59%	72.96%
Chapel Street	south of West Street	3718	4351	4567	17.03%	22.83%
Chesterfield Road	west of Kennedy Street	1477	1772	1841	19.97%	24.64%
Conz Street	south of Smith Street	11787	11658	12152	-1.09%	3.10%
Damon Road	north of Route 9	20184	28576	30498	41.58%	51.10%
Damon Road	west of Industrial Drive	21559	28107	30786	30.37%	42.80%
Damon Road	east of King Street	21531	28070	30746	30.37%	42.80%
Elm Street	west of North Elm Street	9370	10399	10997	10.98%	17.36%
Florence Road	south of Spring Street	10327	11850	12473	14.75%	20.78%
Florence Road	north of Route 66	6966	7596	8124	9.04%	16.62%
Florence Road	south of Route 66	6966	7687	8060	10.35%	15.70%
Florence Street	west of Route 9	3918	4447	4859	13.50%	24.02%
Hatfield Street	east of North Elm Street	4831	5879	6628	21.69%	37.20%
Hatfield Street	west of North Elm Street	3997	4843	5462	21.17%	36.65%
Haydenville Road	at the Williamsburg Town Line	13445	15800	16391	17.52%	21.91%
Industrial Drive	south of Damon Road	3884	4094	4828	5.41%	24.30%
Industrial Drive	north of Bradford Street	3233	3408	4019	5.41%	24.31%
Jackson Street	north of Barrett Street	6008	7393	10097	23.05%	68.06%
Jackson Street	south of Barrett Street	7099	9081	10858	27.92%	52.95%
King Street	south of North Street	16381	16153	17143	-1.39%	4.65%
King Street	north of North Street	22324	22013	23363	-1.39%	4.65%
King Street	south of Barrett Street	23046	25703	27138	11.53%	17.76%
King Street	south of Damon Road	18609	23156	25505	24.43%	37.06%
Main Street	west of Center Street	19742	22394	23089	13.43%	16.95%
Mt. Tom Road	at the Easthampton Town Line	9344	10551	11284	12.92%	20.76%
New South Street	west of Route 9	20592	22515	23191	9.34%	12.62%
North Elm Street	south of Bridge Road	1841	3650	3512	98.26%	90.77%
North Elm Street	north of Hatfield Street	1686	3342	3217	98.22%	90.81%
North Elm Street	south of Hatfield Street	3348	5146	5419	53.70%	61.86%
North King Street	north of I-91 exit 20	11643	15228	15963	30.79%	37.10%
North King Street	north of Bridge Road	20156	25276	29844	25.40%	48.07%
North King Street	at the Hatfield Town Line	10669	11197	11665	4.95%	9.34%
North Maple Street	south of Bridge Road	3809	4407	4834	15.70%	26.91%
River Road	at the Williamsburg Town Line	1199	1370	1389	14.26%	15.85%
Rocky Hill Road	west of Grove Street	3669	4176	4532	13.82%	23.52%
Rocky Hill Road	east of Florence Road	3723	4192	4415	12.60%	18.59%
Ryan Road	south of Clark Street	6332	8265	8909	30.53%	40.70%
State Street	north of Prospect Street	11185	13023	14478	16.43%	29.44%
West Street	west of Route 9	9763	11324	11553	15.99%	18.33%
Westhampton Road	west of Florence Road	3433	3907	4240	13.81%	23.51%
Westhampton Road	west of Glendale Road	2797	3408	4014	21.84%	43.51%





# 8.

## State of the Art—Municipal Transportation Planning

Prior to starting the study, a thorough research of model transportation plans in comparable communities across the United States was conducted by PVPC staff. PVPC focused on the structure of these plans and how community consensus was obtained. Additional research was performed to identify transportation recommendations from existing state and regional documents such as the Regional Transportation Plan, Regional Bicycle and Pedestrian Plan, State Bicycle Plan, etc.

The PVPC consulted with local officials to determine the extent of existing data available for use in the development of the transportation plan. This information consisted of previous studies related to transportation, traffic count data, GIS coverage, accident data, land use and zoning regulations, and bicycle and pedestrian data.

A common theme which emerged from this research, and which informs this plan is: transform existing transportation systems to make it more convenient for people to walk, bike, provide public transit options, and minimize driving distances. This is to be accomplished by melding of land use and transportation planning.

**Table 8-1 - Summary of Strategies from Select Transportation Plans**

<b>Plan</b>	<b>Key Strategies</b>
The Pioneer Valley Regional Bicycle and Pedestrian Transportation Plan	<ul style="list-style-type: none"> <li>Given existing land uses, adapt the transportation facilities to include accommodations for pedestrians and bicyclists, and change the environment so that people feel comfortable walking and bicycling, for example stripe lanes and build facilities for bicyclists and pedestrians on and off roads, build sidewalks, and educate pedestrians, bicyclists, and motorists on how to share the road.</li> <li>Use land differently, so that people do not have to travel such long distances to get to the places they need to go, thereby making it more sensible to walk or ride a bicycle than it is to drive.</li> </ul>
Gainesville, FL 2020 Transportation Plan	<p>The Livable Community Reinvestment Plan identified six general principles:</p> <ol style="list-style-type: none"> <li>1. Re-investing in the traditional core areas of Gainesville and the towns of Alachua County to develop walkable downtown centers.</li> <li>2. Connecting a limited number of highly developed mixed-use centers.</li> <li>3. Providing a high level of premium transit service in a linear Archer Road corridor.</li> <li>4. Encourage increased travel choices to include high quality walking, bicycling and transit environments.</li> <li>5. Maintain the character of existing towns, neighborhoods and village centers.</li> <li>6. Preserve agricultural lands, natural areas, and open space outside of highly developed areas.</li> </ol> <ul style="list-style-type: none"> <li>Developed Framework for evaluating and prioritizing projects, including: Livable Community Reinvestment Plan Consistency, Mobility, Connectivity, Livability, Cost-Benefit Impact, Estimated Cost</li> </ul>
2000 Regional Transportation Plan Portland Metropolitan Area, Oregon	<p>Uses 2040 growth concept – protect livable communities, evaluate options, growing smart, reducing the need to drive, expand transportation choices, avoid sprawl, keep economy strong</p> <p>Policy Aim</p> <ul style="list-style-type: none"> <li>Protect the economic health and livability of the region</li> <li>Improve the safety of the transportation system</li> <li>Provide a transportation system that is efficient and cost-effective, wisely investing limited resources</li> <li>Provide access to more and better choices for travel in this region and serve special access needs for all people, including youth, elderly and disabled</li> <li>Provide adequate levels of mobility for people and goods within the region</li> <li>Protect air and water quality and promote energy conservation</li> <li>Provide transportation facilities that support a balance of jobs and housing</li> <li>Limit dependence on any single mode of travel and increase the use of transit, bicycling, walking and carpooling/vanpooling</li> <li>Provide for the movement of people and goods through an interconnected system of highway, air, marine and rail systems, including passenger and freight intermodal facilities and air and water terminals</li> <li>Integrate land use, automobile, bicycle, pedestrian, freight and public transportation needs in regional and local street designs</li> <li>Use transportation demand management and system management strategies</li> <li>Limit the impact of urban travel on rural lands through use of green corridors</li> </ul>
Oregon Administrative Rules, Land Conservation and	<ul style="list-style-type: none"> <li>Sets requirements for Transportation Systems Plans including, road plan, with standards for the layout of local streets to provide for safe and convenient bicycle and pedestrian transportation, public transportation, bicycle and</li> </ul>

Development Department Division 12 Transportation Planning	<p>pedestrian transportation,</p> <ul style="list-style-type: none"> <li>• Requires new development to consider alternative modes of transportation and make them safe and convenient</li> <li>• Improve bicycle and pedestrian travel – more direct, safer, and convenient</li> <li>• Establish road standards that minimize pavement and right-of-way width to be consistent with the operational needs of the development</li> <li>• Set targets for measuring progress of reducing trip generation and monitor to assess progress every five years.</li> </ul>
Bicycle Transportation Plan: Madison, WS	<p>Four E's: Engineering facility improvements; education; encouragement; and enforcement</p> <ul style="list-style-type: none"> <li>• Meet the needs of all types of bicyclists</li> <li>• Accommodate Bicyclists on roadways (varies by type of roadway)</li> <li>• Neighborhood streets and rural areas – no improvements</li> <li>• Arterial and collectors need additional space.</li> <li>• Provide appropriate facilities (bike lanes, wide curb lanes)</li> <li>• Provide safe intersections and street crossings</li> <li>• Ensure that traffic signals work for bicyclists</li> <li>• Eliminate barriers and hazards to bicyclists</li> </ul>
Transport 2020 Madison, WS	<ul style="list-style-type: none"> <li>• Promote efficient land use/development patterns in Madison and ...</li> <li>• Improve mobility for people and goods, and provide/enhance transportation choices</li> <li>• Improve and enhance economic development and employment opportunities and expand access to jobs</li> <li>• Enhance the natural and social environment</li> <li>• Develop a cost-effective transportation system improvement strategy that maximizes community consensus and institutional support</li> </ul>
Arterial Collector Street Plan: Eugene, OR	<ul style="list-style-type: none"> <li>• Clarifies and implements existing City policy related to the design of major (arterial and collector) streets</li> <li>• Establishes a comprehensive framework for the creation of a multi-modal street system that accommodates bicycles, pedestrians, transit vehicles, automobiles and trucks.</li> <li>• Establishes street classifications</li> <li>• Clarifies the process for decision-making affecting arterials and collectors</li> <li>• Suggest design guidelines and sets minimum design standards</li> <li>• Identifies goals, objectives and planning principles for the design of arterial and collector streets to guide street planning decisions related to livability</li> <li>• Clarifies how traffic calming will be used</li> </ul>
Boston MPO Transportation Plan 2000-2025	<ul style="list-style-type: none"> <li>• Support the economic vitality of the region through timely transportation investments, thereby enabling competitiveness, productivity, and efficiency.</li> <li>• Ensure and increase the safety and security of transportation system users.</li> <li>• Improve mobility for people and freight by providing transportation options, improved service, and efficient system management and operations.</li> <li>• Reduce air pollution and minimize water, soil, and noise pollution, and use transportation enhancement activities to preserve and improve the natural and built environments, making communities and the region more healthy and attractive.</li> <li>• Effectively and efficiently integrate and connect the various components of the transportation system, across and between modes for both people and freight.</li> <li>• Provide a transportation system that is accessible to all people regardless of</li> </ul>

	<p>physical limitations, economic status, or ethnicity, and ensure that transportation system benefits and burdens are shared equitably.</p> <ul style="list-style-type: none"> <li>• Emphasize the preservation and modernization of the existing transportation system. Secure and apply resources for the maintenance and modernization of existing facilities and for appropriate system expansion.</li> <li>• Promote public involvement in all phases of transportation planning and development.</li> <li>• Promote the integration of transportation and land use policies that result in more efficient use of the regional transportation system.</li> </ul>
Comprehensive Plan Elmhurst, Illinois	<ul style="list-style-type: none"> <li>• State proposal for street widening of Northern Ave</li> <li>• Residents – divert demand to by-pass route</li> <li>• City – redesignate street as local</li> <li>• City wide traffic monitoring – turning movements and average daily (directional) volumes</li> <li>• Site traffic impact review – establish traffic impact zones – geographic areas that have strong growth potential or have known traffic issues. Within zones that “anticipated” traffic from planned or committed new development will be accumulated on a street by street basis. The “anticipated” traffic volumes become the base-year traffic for all subsequent traffic impact reviews</li> <li>• Expand commuter station parking</li> <li>• Functional classification of all streets – use to recommend strategies for upgrade (widening, signalization, signage)</li> <li>• Traffic control signage approved by City Council added to Code</li> <li>• Selective speed and sign enforcement</li> <li>• Access control policies and procedures for streets identified by Arterial Corridor Development Standards and Procedures</li> <li>• Specific corridors identified for special arterial access and development control corridor plans, site specific access design and location, land use, landscaping issues</li> <li>• Sign bike routes or prepare a Bicycle Suitability Map identifying recommended bike routes</li> <li>• Maintain a bicycle facilities plan consisting of a cost-effective mix of off-street paths, sidewalks, bicycle lanes, and suitable bike routes linking residential areas with business, shopping, educational and recreational opportunities</li> <li>• Consider bicycle related improvements in street reconstruction or widening projects</li> <li>• Street recommended for bicycle travel should be given priority treatment for routine and major maintenance.</li> <li>• Preserve abandoned railroad rights-of-way, existing utility easements and rights-of-way and river corridors for use as bicycle trails</li> <li>• Provide for safe and convenient bicycle storage on the fringe of the downtown area, at commuter stations, schools, parks, and other likely bicycle destinations</li> <li>• Include bicycles in manual traffic counts</li> </ul>
Flagstaff Area Regional Land Use and Development Plan	<ul style="list-style-type: none"> <li>• Investments be made in public transit, bicycling and walking systems to a greater extent than in the past (balancing the historic emphasis on investments in roadway capacity).</li> <li>• The design of roadway projects take into account the circulation and safety needs of all modes (recognizing that the road network is the principal infrastructure, not just for private motor vehicles, but for all modes).</li> </ul>

<p>Transportation Master Plan Update for the Boulder Valley, City of Boulder – July 1996</p>	<ul style="list-style-type: none"> <li>• Goals include: develop an integrated multi-modal transportation system which emphasizes the role of the pedestrian mode as the primary mode of travel</li> <li>• A transportation system supportive of community goals</li> <li>• Provide sufficient, timely, and equitable financing mechanisms for transportation</li> <li>• Encourage public participation and regional coordination in transportation planning</li> <li>• Establish a transportation system supportive of desired land use patterns and functional, attractive urban design</li> <li>• 2020 Objectives: no growth in long-term vehicle traffic</li> <li>• reduction in single-occupant-vehicle travel to 25% of trips</li> <li>• continuous reduction in mobile source emissions of air pollutants and</li> <li>• no more than 20% of roadways congested (at LOS F)</li> <li>• Policy screen: equity; awareness; efficiency; rewards; effectiveness; incremental.</li> <li>• Investment in alternative modes (pedestrian, bicycle, transit)</li> <li>• Incentives and marketing (ECO Pass)</li> <li>• Regulatory demand management – impose requirements for reduces vehicular traffic</li> <li>• Urban design – planning and designing private sites and public infrastructure to encourage pedestrian and bicycle access</li> <li>• Education and enforcement – safe and courteous use of shared public roadways</li> <li>• Partnerships –</li> <li>• Market-based strategies – pricing and subsidization to influence travel behavior</li> <li>• Telecommuting and tele-travel</li> </ul>
<p>Transportation Plan – Vancouver</p>	<ul style="list-style-type: none"> <li>• Existing network of primary and secondary arterial roads will generally not be expanded. Exception is for connection to the freeway to provide for Port (truck) related transport</li> <li>• Maintain peak road capacity at no more than the present level. No further significant investment to expand motor vehicle capacity into Vancouver in terms of adding additional capacity</li> <li>• Primary arterial roads which connect to the main regional roads will remain the main means for cars and buses to access the regional road network. Transit lanes and bike lanes will not normally be provided on these roads unless space allows.</li> <li>• Transit will be given greater priority to meet the needs of increasing demand for transportation across the city, especially in peak times and for journeys to and within the Downtown. This may include designating some lanes on primary arterials for transit only, for all or parts of the day.</li> <li>• Needs of local communities for pedestrian use, cycling and on-street parking will be given high priority.</li> <li>• Secondary arterial roads that currently carry relatively low volumes and pass through predominantly residential areas, may be classified as neighborhood collectors. Neighborhood collectors are intended to give local access to the arterial road network and are not intended to carry a greater volume of traffic than they do now, except for growth in the local neighborhood or to act as arterials</li> <li>• Promote car pooling while bus only lanes may be more appropriate in the City. HOV lanes will generally not be used for car pools except in the limited circumstances of short queue jumpers. In these instances, occupancy</li> </ul>

	<p>minimum of three people will be promoted.</p> <ul style="list-style-type: none"> <li>• Improvements to bus services on most bus routes to provide service every five minutes at peak times and ten minutes at off-peak times by 2006.</li> <li>• Improve comfort and convenience of transit. Increase service levels to reduce overcrowding, safe, comfortable and convenient bus stops with safe and comfortable boarding areas, timetable and maps, bike racks at bus stops and on buses.</li> <li>• Extension of bus routes in poorly served areas where high residential and employment densities and growing neighborhood centers encourage efficient transit and where increased car use would seriously detract from neighborhood livability.</li> <li>• Transit priority measures to speed up buses will be provided as needed – may include bus bulges, queue jumpers, bus priority at some traffic signals. Bus-only lanes on selected routes</li> <li>• Develop a grid of express bus routes</li> <li>• Use small, community buses and custom services in areas where big buses are not warranted and to feed major bus routes</li> <li>• Bus fare structure which acknowledges the lower transit costs in higher density areas and the use of incentive bus-pass programs</li> <li>• Rail corridors generally reserved for rail use. If discontinued first priority is to use for other forms of transit or greenways</li> <li>• Supports a governance and finance structure for transit which would be more responsive to needs of the city and region – guaranteed revenue source for acquisition of buses and LRT vehicle and for operating the system in a timely way in response to increases in demand.</li> <li>• Paint bike lanes</li> <li>• Provide bike facilities in commercial and residential facilities</li> <li>• Remove unnecessary pedestrian barriers, provide direct routes where practicable, provide incentives for walking throughout the city</li> <li>• Traffic calming, utilizing range of measures, prioritized</li> <li>• Pedestrian space high priority when analyzing impact of roadway changes</li> <li>• Impacts of heavy trucks on neighborhoods to be addressed – stricter enforcement of traffic regulations, restrictions on some routes, truck movement plans for major truck generators, roadside mitigation, where feasible.</li> </ul>
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# 9.

## Implementation Plan

### 9.1 Summary

Because this plan is a part of the city's ongoing planning process, responsibility for its implementation falls on a number of different 'shoulders' within city government and on residents themselves. For detail on the implementation process proposed for the recommendations in this plan, see **Appendix**. The strongest recommendation of this planning effort is that the city of Northampton create an identified entity responsible for addressing transportation concerns in the city. There are many models for such an institutionalization of transportation concerns. Some cities have transportation departments—stand alone or housed within an existing department, such as engineering or public works. Some cities create a staff position, while others create committees—comprised of city staff, elected officials and residents. Given the issues and constraints in Northampton, this plan endorses the last option—a permanent committee, similar to the transportation committee that created this plan. This committee would be responsible for assuring the implementation of all the recommendations in the plan using the proposed tools, policies, and programs.

### 9.2 Detail

#### a. Timeline

September, 2001

Transportation Committee accepts plan from PVPC

October, 2001

Public input and comment on plan—facilitated by Office of Planning and Development

December, 2001  
Transportation Committee finalizes plan

February, 2002  
City government creates standing Transportation Committee—charged with implementing recommendations in Transportation Plan and with oversight for transportation concerns for the city. See implementation chart in Appendix for detail.

#### **b. Transportation Committee**

The transportation will meet monthly. It will be staffed at least half time by city personnel and it may include representatives from the Parking Commission, the DPW, the Office of Planning and Development, the Police department, the Schools, elected officials and the public. Its charge is to assure a thorough and timely response from the city to all citizen transportation-related concerns and to assure implementation of this plan.

Given the reality of limited public funds and overwhelmingly busy staff and volunteers working for the city of Northampton, the committee suggests that the Northampton Parking Commission be expanded into a transportation commission. The parking commission has a staff person and is already looking at transportation issues. It would be fairly simple to expand its scope and membership to allow it to fulfill the responsibilities of a transportation commission outlined in this plan.

#### **c. Goals**

##### **Year one:**

- adopt proposed policies
- apply for GHSA funds to launch public information and enforcement program
- create traffic calming program in DPW
- host a public education event

##### **Year two:**

- work with neighborhoods to calm traffic
- build proposed bike lanes, routes, paths



- adopt model ordinances
- continue enforcement and education efforts

**Year Three:**

- more of the same....



# 10.

## Products

### 10.1 Summary of Products

Attached are a number of DRAFT products that will need to be adopted and approved by various components of the Northampton government.

### 10.2 Management/Administrative

#### a. Implementation Plan

##### September, 2001

Transportation Committee accepts plan from PVPC

##### October, 2001

Public input and comment on plan—facilitated by Planning Department

##### November, 2001

Transportation Committee finalizes plan

##### December, 2001

City government creates standing Transportation Committee—charged with implementing recommendations in Transportation Plan and with oversight for transportation concerns for the city.

## **b. Model for Responding to Citizen Concerns**

Citizen contacts an agency within the City or an elected official with a transportation-related concern.

### **What happens?**

Whomever receives the concern responds to the individual with thanks for raising the concern and explains the following procedure.

The city of Northampton is committed to making Northampton a safe place for all modes of transportation. We would like to have the physical infrastructure to provide safe space for all road users, but this is a very long term goal. In the meantime, we work to enhance safety through a combination of education, engineering, enforcement and encouragement. For more information see the Northampton Transportation Plan—available on the city web-site and at the Planning Department.

Your concern is being forwarded to a city department charged with working on your concern. It is also being forwarded to your city councilor and to the Transportation Committee. The Transportation Committee and your city councilor will follow up with the appropriate city staff to make sure that your concern was addressed.

### **Education:**

The Transportation Committee is working with the Police Department and the DPW and the Planning Department to apply for funds to launch a comprehensive safe moving campaign.

### **Engineering:**

The DPW works to build sidewalks in all new developments, to maintain existing sidewalks and to slowly but surely build the planned bicycle route and path network. The DPW also maintains and plows existing roads.

### **Enforcement:**

The Police Department enforces all traffic laws. The Department applies for grants from the Governor's Highway

Safety Office to conduct overtime enforcement for speeding, anti-drunk driving and runs child safety seat programs. The department has been successful in applying for pedestrian safety grants in the past.

**Encouragement:**

The Transportation Committee is working with the above-mentioned departments and the Mayor's office to secure funds to launch a mini grant program for city neighborhoods. Mini grants would be made available to neighborhood groups to enhance traffic safety and promote alternative transportation.

**Timeline:**

The Transportation Committee meets monthly—so your concern will be brought to their attention within four weeks at the most. At the meeting it will be assigned to someone to follow. They have three weeks to get back to you, so you should hear back from someone within seven weeks at the longest, probably sooner.

A chart that outlines possible responses to your concern is presented in Table 10-1.

**Table 10-1 - An Overview of Approaches to Addressing Transportation Safety Concerns**

<b>Approach</b>	<b>Physical Environment</b>	<b>Political (regulatory) Environment</b>	<b>Individual</b>	<b>Community</b>
<b>Engineering</b>	<ul style="list-style-type: none"> <li>⇒ Traffic Calming: speed humps, curb bulb-outs, brightly painted crosswalks, etc.</li> <li>⇒ Speed Limits</li> <li>⇒ Street Design-narrower, on-street parking</li> <li>⇒ Bike parking</li> <li>⇒ On-street bike facilities: bike lanes, bike-activated signals, bike-friendly drains, bike route signs</li> <li>⇒ Ped facilities: 4-way ped signals at crosswalks, watch out for peds signs,</li> <li>⇒ Off-road bike/ped facilities</li> <li>⇒ Paved shoulders</li> <li>⇒ Bicycle level of service</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Require consideration of peds/cyclists on all projects</li> <li>⇒ Institutionalize review of all projects for ped/bike needs</li> <li>⇒ Ped/bike advisory committee to the DPW and/or Engineering department</li> <li>⇒ Designated person responsible for transportation safety</li> <li>⇒ Transportation Plans—with ped/bike alternative mode components (or separate plans)</li> <li>⇒ Money set aside for transportation safety</li> <li>⇒ Mandatory bike helmet laws</li> <li>⇒ Mandatory yield to peds in crosswalks laws</li> <li>⇒ Mandatory use of child safety seats and seat belts laws</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Bike helmets</li> <li>⇒ Retro-reflective gear</li> <li>⇒ Seat belts</li> <li>⇒ Child safety seats</li> <li>⇒ Lights on bikes</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Street reclaiming</li> <li>⇒ Home-made signs asking people to slow down</li> <li>⇒ Multi-modal transportation centers/resources—bike racks on buses, showers at park (bike) and ride lots</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>⇒ Bike maps</li> <li>⇒ Walking maps</li> <li>⇒ Safe route to school planning</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Educate government staff so they can take advantage of ‘cutting-edge’ approaches</li> <li>⇒ Ped/bike advisory committee to the DPW and/or Engineering department</li> <li>⇒ Driver licensing</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Public Information campaigns: brochures, public service announcements, posters, place mats, posters on buses, billboards, bookmarks, etc.</li> <li>⇒ Effective cycling classes</li> <li>⇒ Bike rodeos</li> <li>⇒ Helmet give-away programs</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Integrate transportation safety into school curriculums</li> <li>⇒ Public info campaigns</li> </ul>
<b>Enforcement</b>	<ul style="list-style-type: none"> <li>⇒ Identify high crash locations and post officers there</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Spend a portion (or all) of all traffic violation funds on transportation safety</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Cite violators</li> <li>⇒ Overtime enforcement programs</li> <li>⇒ Reward people for good behavior!</li> </ul>	
<b>Empowerment Encouragement</b>	<ul style="list-style-type: none"> <li>⇒ All of the above!</li> </ul>	<ul style="list-style-type: none"> <li>⇒ All of the above!</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Employer incentive programs for people who walk/bike to work</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Reclaim the streets—a la David Engwicht</li> <li>⇒ Bike commute events</li> <li>⇒ Walk your child to school events</li> </ul>

Some counter measures appear in more than one category.

**c. Draft Framework for Evaluating Proposed Projects**

This framework presents an approach to evaluating transportation projects pending in the City of Northampton. The following questions directly relate to the adopted goals and objectives of the city transportation planning process.

**Consistency with “Livable Community Reinvestment Plan” Vision**

- Does the project promote reinvestment in the traditional core area of Northampton?
- Does the project connect/support a limited number of highly developed mixed-use centers?
- Does the project support the development of premium transit service?

**Connectivity**

- Does it connect two or more existing or planned centers?
- Does it provide additional network to improve travel options?
- Traffic volume reduction / level of service benefit on parallel road(s)
- Does the project improve access for non-auto modes?

**Mobility**

- Traffic volume using the road – does it meet demand?
- Roadway level of service benefit – are conditions improving with the project?
- Is there transit service coverage / frequency improvements
- Does the project enhance the status of multi-modal corridors?
- Does the project improve travel choices in an area or to a destination?
- Does the project improve mobility or access to jobs for disadvantaged citizens?
- Is there a regional benefit for the project, i.e., does it address regional traffic demand?

**Livability**

- Does the project promote the area as a destination?
- Does the project support growth in established centers or will it spur new development in outlying areas?
- Does the project negatively affect established neighborhoods or environmentally sensitive areas?

- Does the project help preserve established neighborhoods, agricultural lands, natural areas and open space?

#### **Cost Benefit**

- Is the project at least partially funded with private sector dollars, or can that reasonably be expected?
- How does the project's cost compare with other Needs Plan projects?
- Who or what areas most benefit from the cost expenditure?
- Does the expenditure leverage private sector investment that could be consistent with the Plan's goals and objectives?
- Is the cost related to a tangible benefit in terms of mobility and/or accessibility?

### **10.3 Traffic**

#### **a. Draft Neighborhood Traffic Calming Policy**

##### **Process**

The Transportation Committee will identify a timeperiod to consider residential requests for traffic calming devices on annual basis. One possibility is from January 1<sup>st</sup> to March 1<sup>st</sup> of each calendar year. This allows for a sufficient timeframe to verify problems, prepare a budget for improvements, have neighborhood meetings, and implement the preferred alternative. A proposed schedule is outlined below:

Solicit Requests for traffic calming projects	January 1 <sup>st</sup> – March 1 <sup>st</sup>
Verify Problem Areas	April 1 <sup>st</sup> – May 1 <sup>st</sup>
Rank Projects	May
Implementation	June - October

##### **Requests**

In order to be considered the roadway must be classified as a local or collector street that is primarily residential in nature. Residents will be asked to submit a letter of request signed by at least 60% of all residents of the neighborhood impacted by the problem. The letter should include at a minimum, the following information:



- The location of the problem. If more than one street is experiencing problems, then all streets should be named.
- A detailed description of the problem, such as excessive vehicle speeds, cut-through traffic, or safety concerns. Information on the time of day and day of the week on which the problem occurs should also be provided.
- The names address and phone numbers of at least 60% of residents, property owners, and business owners within the affected area.
- An assessment of the cause of the problem and any proposed solutions.
- Willingness of the neighborhood to participate in the selection and implementation of a traffic calming device.

The Transportation Committee will review all requests to determine the eligibility based on the content of the application. Additional data on vehicle travel speeds, crash history, and daily traffic volumes will be collected by the appropriate City department to verify each problem. The following criteria should be considered when identifying problem areas:

	<b>Collector Street</b>	<b>Local Street</b>
Cut-Through Traffic	> 40% of total volume	> 25% of total volume
85 <sup>th</sup> Percentile Speed	10 mph > speed limit	5 mph > speed limit
Pedestrian Crossings	> 60 pedestrians per hour	> 25 pedestrians per hour
Crash History	Average of 5 crashes per year	Average of 4 crashes per year

Source: Institute of Transportation Engineers

The Transportation Committee should also consult with the Fire Chief and Chief of Police to obtain their input on the impact of changes to the proposed area. At the end of the verification process a letter will be sent out to notify residents of the status of their request.

#### **Development of Project Selection Criteria**

Requests for traffic calming devices are likely to exceed the available resources of the City. Therefore, a system should be developed to prioritize requests based on the type and severity of the problem. The Transportation Committee should develop a prioritized list of transportation problems they would like to see addressed and attach a scoring methodology to each problem. For Example:

Excessive Speeds	1 point awarded for each mph over speed limit
Crashes	1 point awarded for each vehicle crash over last 12 months 5 points for each crash involving a pedestrian
Vicinity to Schools	3 points awarded

The Committee should revisit the scoring criteria periodically to ensure it remains consistent with their long-term transportation goals.

### **Implementation**

The Transportation Committee should develop an implementation plan for the coming year based on projected available funds and the project ranking process. A neighborhood meeting should be scheduled with the top ranked project to identify proposed improvements and gain public consensus on a preferred improvement plan.

The preferred alternative should be installed by the Department of Public Works on a temporary basis and tested for a minimum of three months. At the end of the three month evaluation period, a second neighborhood meeting will be held to discuss any problems with the temporary installation. At this time, the device can be removed or installed on a permanent basis.

### **Removal**

While it is hoped that both the public participation process and evaluation period would be sufficient to adequately gauge the effectiveness of an improvement, it is important to have a process in place by which residents can request the removal of a traffic calming device. Removal of existing traffic calming devices should be considered by the Transportation Committee upon receipt of a signed petition of at least 80% of the residents in an affected area.

## b. Applicability of Devices

	Speed Table/ Raised Cross-walk	Raised Inter-sections	Speed Humps	Chicanes/ Serpentines	Chokers	Half Closure	Mid-Block Island	Lane/ Pavement Narrowing	Neck-down/ Curb Extension	On-Street Parking Treatments	Cul-de-sac	Diagonal Diverter	Gateway	Median Barrier/ Island Diverter	One-Way Streets	Semi-Diverter	Street Closure	Traffic Circle / Roundabout	Woonerf
<b>Arterial Streets</b>																			
Speed Reduction										Low									
Traffic Volume Red.																			
Truck Volume Red.										Low									
<b>Collector Streets</b>																			
Speed Reduction	Moderate	Moderate	Low	Low	Low	Low	Low	Low	Low	Low			Low					Moderate	
Traffic Volume Reduction	Low	Low		Low	Low	Low	Low		Low	Low			Low	Low				Low	
Truck Volume Reduction	Low	Low			Moderate				Low	Moderate						Low		Low	
<b>Local Streets</b>																			
Speed Reduction	High	High	High	Moderate	Moderate	Low	Low	Moderate	Moderate	Moderate			Low					High	Low
Traffic Volume Reduction	Moderate	Low	Low	High	Moderate	Moderate	Moderate	Moderate	Low	High	High	High	Moderate	High	Moderate	High	High	Low	High
Truck Volume Reduction	Moderate	Moderate	Moderate	High	High	High	Low	Moderate	High	High	High	High		Moderate	Moderate	High	High	High	Moderate

Source: *Traffic Calming Guidelines*, November 2000, Massachusetts Highway Department



### c. Impact of Transportation Improvements

Tool	Vehicle Volume	Vehicle Speed	Noise	Vehicle Conflicts	Divert Traffic to Residential Streets	Pedestrian Safety	Bicycle Safety	Emergency Vehicle Access	Cost	Time-frame	Class of Street Use
Angle Parking		+		-			-		low	short	both
Paved Walkways						+			high	short	both
Bike Lanes							+		high	short	arterial
Bus Stop Turn-ins		+		-		+			high	long	arterial
Bus Stop Lighting						+	+		low	short	both
Chicanes		+	+	+		+		-	high	short	residential
Chokers	+	+	+		-	+		-	low	short	residential
Paved Sidewalks						+			high	long	both
Curb Bulbs		+				+			high	long	both
Full Street Closure	+	+	+	+	-	+	+	-	high	long	residential
Marked Crosswalks									low	short	arterial
Medians		+	+	+	-	+		+	high	long	arterial
No Parking		-							low	short	both
One-Way Street	-	-	-	+	-	+	-		low	short	both
Partial Street Closure	+		+	+	-	+	+		low	long	residential
Pedestrian Refuge Islands		+	+	+	-	+		-	high	long	arterial
Pedestrian Traffic Signals			-			+	+		high	long	arterial
Raised Intersections		+	-						high	long	both
Roundabouts		+	+	+					high	long	arterial
Speed Humps	+	+	-			+		-	low	long	residential
Street Cleaning							+		low	short	both
Traffic Circles		+	+	+		+			low	short	residential
Traffic Signals			-	+		+	+	+	high	long	both
Traffic Signal Timing				+	+	+		+	low	short	both
Transit Passenger Shelters						+			high	short	both
Two-Way Left Turn Lane		+		+				+	high	long	arterial
<b>+ = positive effect</b>			<b>- = negative effect</b>								

source: "Making Streets That Work", City of Seattle

## 10.4 Pedestrian

### a. Pedestrian Walk Time Study

The amount of time necessary for a person to cross the street is based on three factors

- Crossing Distance
- Average Walking Speed
- Average Gap Time (in seconds) between vehicles

**Crossing distance** can be defined as the total distance from curb to curb, or the total distance from the near side curb to  $\frac{1}{2}$  the width of the farthest travel lane. In areas with raised median, the distance should be computed separately on each side of the median.

**Average Walking Speed** differs per person, but is generally agreed to fall on average within the range of 3.5 to 4.0 feet per second. In certain instances such as for areas where a high percentage of elderly residents and small children will cross the street, lower values may be used.

**Vehicle Gap Time** is defined as the total time in seconds between the rear bumper of one vehicle and the front bumper of the closest following vehicle (in either direction).

#### Study Methodology

- The minimum vehicle gap in seconds is calculated by dividing the crossing distance by the average walking speed.
- Actual vehicle gaps are counted during the peak hour of pedestrian travel.
- A pedestrian count should be conducted simultaneously.
- The number of gaps which are greater than or equal to the minimum gap size should exceed the number of pedestrian crossing the street.
- Traffic signals may be warranted when the pedestrian volume crossing the major street at an intersection or mid-block location on an average day is 100 or more for each of any four hours or 190 or more for any single hour. In addition there must be less than 60 gaps per hour in the

traffic stream of adequate length to allow pedestrians to cross the street during the same time period when the pedestrian volume requirement is satisfied.

## **b. Sidewalk Inventory Methodology**

A sidewalk inventory is a comprehensive database of the location, type and condition of all sidewalks in a community. This is valuable information for a variety of planning applications such as:

- The development of “official” school walk routes.
- The location of bus stops.
- Identifying pedestrian safety improvements.
- The development of a comprehensive maintenance plan.
- Identification of future needs and areas where connectivity is missing.

The actual inventory can be performed in a variety of ways. In a nominal amount of time, local staff can perform a very quick “windshield” inventory. A more detailed survey can be conducted using a global positioning system (GPS) to collect information on the exact location of the sidewalk. This is a very intensive process and can be extremely time consuming. As a result, the windshield method is better suited for planning needs, and the GPS method for construction needs.

### **At a minimum, a sidewalk inventory should include:**

- Location of the sidewalk (i.e. between Main Street and South Street).
- Side of street the sidewalk serves (i.e. east side, west side, both sides)
- Type of sidewalk (bituminous concrete, portland cement, etc.)
- Width of sidewalk
- Type of curbing
- Location of handicap accessible ramps
- Condition of sidewalk (Good, fair, poor)

This information can then be input into the geographic information system (GIS) database for use in mapping and planning activities. Ideally, this information should be updated on a regular basis. Additional information on the data of reconstruction or new construction should be included in the

database as it becomes available to assist in the planning of future sidewalk projects.

c. **Crossing Rules for Pedestrians**

**ALWAYS** follow these steps when crossing a street:

- Before crossing, stop at the curb, edge of the road, or corner before proceeding.
- **LOOK LEFT-RIGHT-LEFT**, and if it's clear, begin crossing, looking over your shoulder for turning vehicles.
- Continue to check for traffic while crossing.

d. **Traffic Signal Messages and Their Meanings**

- At intersections with traffic lights and pedestrian signals, it's important to follow the signals carefully. Wait until you see the WALK signal, following, again, the basic rules for crossing.
- A flashing **DON'T WALK** signal indicates you shouldn't start to cross the street. However, if you are in the middle of the street and the **DON'T WALK** signal starts flashing, continue walking. You have time to complete the crossing.
- If you see a steady **DON'T WALK** signal, don't begin to cross the street! Wait for the next **WALK** signal.
- The **WALK** signal and the green traffic light indicate that it's your turn to cross the street, but they do **NOT** mean it is **SAFE** to cross. The **WALK** signal and the **GREEN** light mean LOOK, and then, if it's safe, go.

Remember to make eye contact with drivers to ensure they see you. Don't take a walk signal, a green traffic light, or a driver for granted. Crossing safely is your responsibility. Remember, it's up to you.

Source: Federal Highway Administration, <http://www.fhwa.dot.gov/tndiv/saftped.htm>



## 10.5 Bicycle

### a. Guidelines for Bicycle Lockers

Providing safe and secure bicycle parking is a low-cost/high return improvement for encouraging employees to commute by bicycle. Lack of adequate bicycle parking facilities and the fear of theft are major deterrents for all bicyclists. While Northampton has launched an extensive bike rack-parking program in the downtown (in partnership with the Pioneer Valley Transit Authority), bike lockers have not been installed. The following guidelines are intended to provide information to assist the city in implementing a bike locker program.

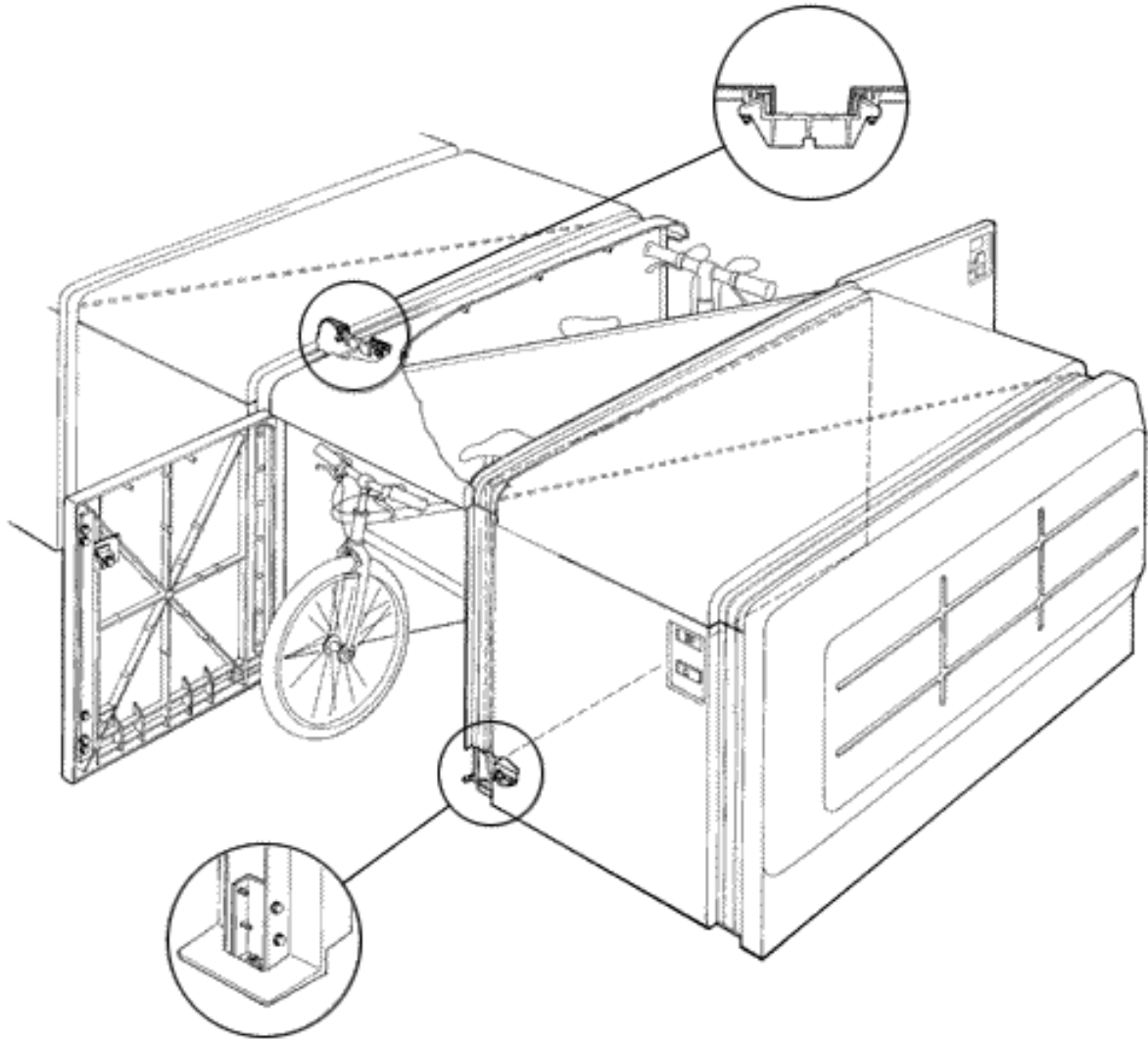
#### Bike Locker Design

Bike lockers consist of rectangular shaped boxes (3 feet by 6 feet) design for placement outdoors. Each bike locker typically stores 2 bicycles in separate locking compartments. While a bike rack provides short-term security, bike lockers typically provide long-term parking for employees, students, residents, commuters and others who generally stay at a site for 4 or more hours. The locker provides security from theft, protection from the weather, and storage for accessories including helmets, backpacks, and child seats.

#### Locker Location

The first step in planning is finding a good location. The location you choose should meet the needs of your potential users and consider where cyclists want to park, not where you might like them to park. To ensure your locker will be used, be sure to choose locations that are convenient enough to encourage cycling; and secure enough that people feel safe using them. Lockers can be difficult to blend into the existing landscape or desired streetscape architecture. Consideration should be given to the aesthetic impact of the locker. As with most street furniture, the bike locker may collect graffiti, posters, and pamphlets. If not maintained, the locker can attract unwanted use as temporary shelter, or for storage of personal belongings. These unwanted uses are unlikely to occur when the locker is located in a secure location.





For convenience, lockers should be located on-site or within 700 feet of the site. Bicycle commuters are generally willing to walk a short distance if they are confident the parking is secure. Well lit areas monitored by a security camera, an attendant, or visible from employee work areas are ideal. It is better to have a one successful locker location than two that are physically isolated and not be used.

Key considerations in choosing a site:

- Cyclists want to park as close to their destination as possible.
- Bicycle parking should be at least as convenient as the most convenient auto parking you provide for the same use.

- To minimize theft and vandalism lockers should be located in highly visible areas.

Lockers should be located:

- Near main entrances.
- Along natural surveillance corridors (near heaviest pedestrian traffic, across from building, windows, etc.)
- Where easy access is provided.
- In well-lit areas at night.
- In shaded areas during the day (when possible).
- Under roofs or canopies (when possible).
- On flat surfaces.
- Away from automobile traffic.
- At transit stops.

Additional questions to consider:

- Is a sign necessary to direct cyclists to parking?
- Does the locker interfere with pedestrians?
- Are the lockers vulnerable to damage from parking cars, delivery operations or vandals?
- Does the locker complement your site's landscape and architecture?

### **Operation and Maintenance**

There are three alternatives for bike locker operation. The lockers can be key operated and rented for a period of time, they can be coin operated like a parking meter, or locked using bike locks supplied by the user. The key operated system provides the most controls and highest use and highest operating costs. The self-locking system provides the least control at the lowest cost.

### **Purchase and Installation Cost**

The following cost estimate for bicycle lockers is based on 2000 prices for materials and labor. It is assumed that some of the initial grading and finish work (including landscaping and drainage) will be included as part the existing site. Specifications for bicycle lockers are included in the appendix. The cost breakdown for a locker installation with a capacity of 4 bicycles is listed here:

Purchase of 2 dual unit bicycle lockers (capacity 4 bicycles)	\$4,208
Shipping and handling FOB Northampton, MA	\$490
Construction of concrete pad	1,900
Installation of bicycle lockers	200
<b>Total Cost</b>	<b>\$6,798</b>

**Preliminary Site List:**

Street	Location	Employer	#Locker Units
Kirkland Street	Rear Entrance to Thornes Market	Various, retail	2
Crafts Avenue	Rear Entrance Municipal Office Bldg.	City of Northampton	2
Merrick Lane	Adjacent to exiting parking lot	County Courthouse	1
Locust Street	Adjacent to exiting parking area	Cooley Dickinson Hospital	1
Main Street	Rear Entrance to City Hall	City of Northampton	1
Masonic Street	Adjacent to existing parking area	Various, retail	1

# Northampton Bicycle Program

Please print and fill out the forms below. Send completed forms to Northampton Office of Planning and Development at the City Hall.

## Bicycle Locker Application Form

Date: \_\_\_\_\_

Name: \_\_\_\_\_ HomePhone: (\_\_\_\_) \_\_\_\_\_

Home Address: \_\_\_\_\_

City: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Typical Work Hours: \_\_\_\_\_ AM/PM - \_\_\_\_\_ AM/PM

Supervisor Name: \_\_\_\_\_ Ext. \_\_\_\_\_

Commute Distance (One Way): \_\_\_\_\_ Commute Time: \_\_\_\_\_

Days per week you bike to work: \_\_\_\_ Actual Days (Circle): M T W T F Varies

Days per week you'd bike to work if you had a locker: \_\_\_\_ , M T W T F Varies

If you use public transportation for a portion of your commute trip, which transit system do you ride?

Is any other work time bike storage space available to you? \_\_ yes \_\_ no

If yes, please identify: \_\_\_\_\_

Additional comments or special considerations:

## Bicycle Locker Agreement

**PURPOSE:** The purpose of this document is to provide each applicant with the terms and limitations for participation in the Bicycle Locker Program. The goal of this program is to promote commuting by bicycle by providing employees with secure, convenient bicycle storage.

**QUALIFICATIONS:** Employees who commute by bicycle on a regular basis (3 or more times a week) will have first priority for lockers. A waiting list will be maintained in the event that the demand exceeds the available supply. This list will be referenced when more lockers become available.

**USE:** Bicycle lockers are provided for use as secure, weather proof bicycle storage for personnel who have enrolled in the locker program and commute to work on their bicycles. They are intended for use as storage for one bicycle and bicycling accessories only. Food, perishables, hazardous or combustible materials, including oils and aerosol cans, are not to be stored in bicycle lockers. No stickers, markings, or other decorations are to be placed on or inside the lockers. Employees are responsible for keeping the inside of their assigned lockers clean.

A built in lock and a key will be provided with each locker. No additional, personal or other, locking devices are to be attached to the lockers. If a key is lost, it is the responsibility of each participant to notify the City of Northampton immediately. Replacement keys will be issued at cost incurred for replacement. A \$10.00 refundable deposit is required for the key. In case of lost or misplaced key, notify Security Dispatch at Ext. 4-5416 to open the bicycle locker.

**RENEWAL:** Lockers are assigned for a maximum period of six months (from Daylight Savings time to Standard Time and vice versa). Employees wishing to renew their assignments must reapply during the appropriate enrollment period.

**INSPECTION:** Each locker will be inspected prior to employee use to ensure that it is in good working condition. Lockers may, at the City of Northampton's sole discretion, be subject to periodical inspection and maintenance. Employees are expected to notify the Parking Authority of any operating difficulty or damage.

**LIABILITY:** City of Northampton is not responsible for and assumes no liability arising from the use of the bicycle lockers or damage due to fire, theft, destruction, etc., to or loss of any article stored in the bicycle lockers.

I, the undersigned, have read, understand, and agree to abide by the terms and limitations set forth by the City of Northampton for the use of a bicycle locker.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name (printed) : \_\_\_\_\_ Ext: \_\_\_\_\_

Org. Code: \_\_\_\_\_ Bldg. \_\_\_\_\_ Rm. \_\_\_\_\_ Mail Stop: \_\_\_\_\_

By your acceptance of this Agreement, you acknowledge the locker space is granted only as a license of space and no bailment is intended or created. If in the opinion of the Northampton Parking Program Manager, it is determined that an employee does not comply with the terms and limitations stated in this agreement, said employee's privileges received under this program shall be revoked, and after sufficient notification, any items remaining in the locker shall be turned over to the Parking Authority for reclamation.

Any personnel witnessing the use of these bicycle lockers for anything other than that which is outlined by this agreement, will be encouraged to report such abuses to the Parking Program Manager.

## **b. Designing Roads to Accommodate Bicyclists**

Bicycling is a high priority for the City of Northampton. Recent planning efforts, including Vision 2020, Safer Streets Task Force have called for an increase in the level of bicycling and a reduction in the number of bicycle injuries. Unless the risk of injury for bicyclists is reduced however, these two goals create a conflict. One way to achieve both of the stated goals (reduced injuries & increased ridership) is through improved roadway design. Bicyclists are impacted by many of the same conditions that influence drivers: traffic volumes, pavement condition, travel lane width, shoulder width, development, and congestion. Federal Highway Administration studies have documented that improvements to the roadway design can both encourage people to bicycle and reduce the risk of injury. The design improvements already implemented on city streets include bike lanes, wide curb lanes, and striped shoulders. These geometric changes design improvements provide a benefit to bicyclist and motorists by making it more comfortable for both modes, by reducing unpredictable or potentially unsafe movements by both motorists and bicyclist and minimizing the risk of conflict or crash. The Massachusetts Highway Department and Federal Highway Administration support the use of these facilities. In issuing Directive E-98-003, MassHighway directly addressed this issue:

*“The Massachusetts Highway Department benchmark for reasonable bicycle accommodation is to provide a continuous usable paved shoulder adjacent to the outside travel lane in each direction on roadways where bicyclist are legally permitted. The desirable width of the outside travel lane plus the paved usable shoulder (curb lane) for the accommodation of bicycles is 4.5 meters (plus .5 meter “guardrail” offset). For roadways with low speeds of less than 45 mph (85<sup>th</sup> percentile speeds) combined with low volumes of less than 2000 AADT, the minimum roadway widths as defined in Chapter 8 of the Highway Design Manual may be used to conform with bicycle accommodation. Bicycle lanes and shoulder bikeways are encouraged and should be considered early in the design process. “*

The MassHighway design manual provides two tables (5.1 and 8.2) to further clarify the geometric design goals. A metric-to-



english conversion of these tables is shown on the attached figure.

The use of bicycle lanes, incorporation of paved shoulders, and striped shoulders should be considered in any new design or redesign of city streets. Many cities and towns in the Commonwealth have begun implementing the new design standards annual repainting program for crosswalks and lane markings. Roadway improvements requiring major redesign or right-way-acquisitions to provide the desired shoulder width will be completed as part of re-construction projects. There are roadway projects in Northampton that fall into both of these categories. The Bicycle Level of Service Evaluation data included in the appendix provides travel lanes widths and shoulder widths for every major roadway in Northampton. This database identifies roads with sufficient width for bike lanes or striped shoulder lanes. The roadway improvements can be prioritized using information provided by the map of proposed bike routes and bike lanes developed by the bicycle committee (see Figure 7-1).

Insert masshighway metric conversion figure

## 10.6 Neighborhood *PACE CAR*<sup>3</sup>



*Imagine speed bumps that automatically get out of the way when approached by emergency vehicles.*

*Imagine speed bumps that don't jolt the driver, and do no damage to the car suspension.*

*Imagine a speed bump that even sometimes gives a cheery wave and smile to motorists, pedestrians and cyclists.*

*Imagine that this extraordinary, state-of-the-art speed bump costs no more than \$5.*

*Enter the Neighborhood PACE CAR.*

### Goals:

- To enable residents and the city to work together in calming traffic on all streets city-wide while minimizing the need for physical 'engineering devices' to slow traffic.
- To make it safer, healthier and more enjoyable to walk and cycle.
- To encourage residents to begin using their streets for neighborhood-building activities.

### Program overview

- Residents sign a pledge to drive within the speed limit and be courteous to pedestrians and cyclists. They display the official *PACE CAR* sticker on their car so motorists behind know why they are driving courteously.
- The city works with other partners to increase the number of *PACE CARs* on the streets: busses, city vehicles, police, government vehicles, commercial vehicles, etc.
- Humor is used to break tension, reduce the risk of road-rage, and rehumanize the street environment.
- **Optional addition:** Streets (or blocks) that have 70% of vehicles acting as *PACE CARs* can designate themselves as a *Pace Street* which may entitle residents to certain benefits from the city. This process, facilitated by a *Pace Street Kit*, should take about 2 – 4 weeks.

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<sup>3</sup> David Engwicht, *Towards NEW Tools*, Version 1.1 (David Engwicht Communications, 2001)

## Ideas for implementing

- Residents who register complaints to the city or police about traffic impacts in their street, or ask for traffic calming, are offered the *Pace Street Kit* as a first response.
- The *Pace Street Kit* helps residents organize a street corner or open porch information gathering where residents are invited to sign the *PACE CAR* Pledge. Some residents volunteer as *Pace Street Promoters* and visit the remainder of households who did not attend the information gathering.
- To mark their street as a *Pace Street* (and to reduce visual pollution), residents paint a blue strip on curbing (about 1 foot long) on the entrances to their street.
- During the first 4 weeks after becoming a *Pace Street*, residents are encouraged to meet and share their stories. (Possibly called the *Pace Street Coffee Club* which meets on the sidewalk or a front porch – BYO chairs and coffee).
- Streets are encouraged to mentor other streets and form a *Sister Street* relationship.
- *Pace Streets* (or blocks) may consolidate into larger *Pace Zones*.
- To introduce humor, residents may be offered bumper stickers like these used in Boise:

*If I am going too fast... HONK!  
Would you rather I was a speed bump  
Follow me to the next red light  
My other car is a cop car  
Don't blame me. It is the PACE CAR in front.*

- Police cars can carry a sign under the *PACE CAR* logo:  
*Except when chasing bad guys*
- Busses can carry a humorous sign on the back, like:  
*You are going so slow, you may as well ride with us*
- The city may create a *Pace Street Home Delivery Van* which becomes the focus of the street corner information gatherings. The *Home Delivery Person* would collect images and stories about what other streets are doing to reclaim their street and return to *Pace Streets* on a regular basis to share ideas.
- The *Pace Street Kit* may contain *PACE CAR* bunting and lawn flags that would be displayed during the 2-4 week process.
- Cities may help residents produce a *Welcome to our Pace Street* packet that is given to new residents. It may contain information about the *PACE CAR* program, but also a public transport timetable for the area and information about local businesses.
- Merchants could be encourage to offer discounts for those belonging to *Pace Streets*.

- To make all residents feel part of being a *Pace Street* -- even if they don't have a car or don't drive -- we may invite them to become a *Pace Street Supporter*. They may sign a 'pledge' to encourage others to become Pace drivers and to acknowledge drivers that do the right thing by giving them a secret 'good *PACE CAR* driving' signal such as a thumbs up.

## 10.7 Red Sneakers School Quest<sup>4</sup>

### Goals

- To make streets safer for kids by:
  - reducing danger from traffic
  - reducing 'stranger danger'
- To raise community awareness of kid's needs for safer streets.

### Program overview

- The ***Red Sneakers School Quest*** involves kids in the great quest of making streets safer for kids.
- Students earn quest points for reducing the number of cars on the streets by walking to school during a Quest Week.
- The school in each city, with the highest average number of quest points per student, wins the *Red Sneakers Award*. There may also be an international competition with a prize for the best school world-wide.

### Design criterion

- Not require teacher input (although this is welcome if offered).
- Minimal intrusion into class time.
- Minimal workload on the school administration.
- Capture the enthusiasm and organizing ability of children.
- Fit into a short time frame but have a year-long impact.
- Get the entire school community working together on a common task.

### Ideas for implementation

- The Quest lasts for one week with a three or four week lead in which is 'training for the quest'.
- Students earn quest points for each time they walk to and from school during the Quest Week. To qualify as walking, students must come by non-motorized transport either all the way or a minimum of a certain number of blocks (which may be different

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<sup>4</sup> David Engwicht, *Towards NEW Tools*, Version 1.1 (David Engwicht Communications, 2001)

for different grade levels). They get bonus points for walking every day.

- If the school has a WOW program (Walk on Wednesdays) each student receives 'bonus starter points' (to qualify school must have a WOW strategy, publish 4 articles on benefits of walking in newsletter and carry the WOW logo on all issues of newsletter).
- David and his team produce a *Red Sneakers School Quest Kit* that helps schools implement the program. This would include such things as lead-up articles for the newsletter and how to implement a WOW program.
- Each school in the city is given a participation plaque with the year and average points per student.
- The city may offer prizes based on a random draw of participants.
- If the Quest timing is coordinated city-wide, country-wide or world-wide, then it can be backed by an advertising campaign from the city and other levels of government.

### **Possible alternative, extension or sister program**

The following ideas may be an alternative to that suggested above, be integrated into the program above, or be a separate sister program.

- Students sign up adult *Pacing Partners*. The child walks during the Quest Week while the adults agrees to act as an official or unofficial *PACE CAR* Driver. Points are awarded for number of partnerships signed.
- School gets bonus points for having a POW WOW strategy – *Pace on Wednesday, Walk on Wednesday* -- in which kids are encouraged to sign up pacing partners.
- Kids earn quest points for each *PACE CAR Sponsorship* deal they sign. The child gets to put an 'official sponsors sticker' next to the *PACE CAR* sticker on the back of the car. The official sponsor's sticker will carry the year of issue and the child will write their name in permanent ink pen on the sticker as the sponsor. (This allows us to renew Pace Driver pledges yearly with an annual drive and keeps all schools on an equal footing regardless of the year they join the program.)
- Kids may be encouraged to work with each other in setting up a *PACE CAR Sponsorship Stall* in their neighborhood on a street corner or a front porch. They can leaflet the surrounding area. The school may be provided with a number of *PACE CAR Sponsorship Kits* that would help the kids establish these stalls. The school would advertise the location of these stalls so kids who do not set up a stall can take their parents or friends and sign them up.
- We start a *Kids' Pace Club* (with its own web headquarters) and all kids participating in the Red Sneakers Quest are given the 'secret

password’. This club may suggest other things that kids can do to help make streets safer for kids (e.g. if the *PACE CAR* is not part of the Quest, it could become an activity of the club or a separate competition.)

- The following activities may be used as a follow-up to the Quest or used as a focus for the *Kids Pace Club*.
  - Students record the distance the cars in their household cover in a week (note odometer at beginning and end of a week) then see how much their family can reduce their car use in a week.
  - Citizenship training in working with streets around the school to help them become *Pace Streets*.
  - Street Reclaiming activities around the school (see Street Reclaiming section.)
  - A challenge to leave the second car at home for a week.

## 10.8 Street Reclaiming<sup>5</sup>

### Goals

- To enable residents to reclaim their street as the social and cultural epicenter of neighborhood life while still maintaining its role for moving people and goods.
- To employ traffic calming techniques that:
  - do not ‘punish’ motorists but welcome them into the street space as a ‘guest’
  - are more cost-effective than 1<sup>st</sup> Generation Traffic Calming

### How it works

While the *PACE CAR* helps people calm their street when in their car, *Street Reclaiming* helps them calm their street when not in their car. For example, sitting in a rocking chair on the sidewalk helps to calm traffic.

Understanding street reclaiming techniques (and how they differ from traditional traffic calming) starts with understanding how residents lost their streets in the first place.

Children once played in our streets and adults met there to chat. As traffic increased, parents became intimidated and instructed their children to play on the sidewalk. Moving the children (and other adult activities) out of the street encouraged the traffic to go faster. This made it feel unsafe to play or hold conversations on the sidewalk, so these activities were moved to the front yard or local park. So the traffic went even faster. As speeds increased, residents retreated even further by not

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<sup>5</sup> David Engwicht, *Towards NEW Tools*, Version 1.1 (David Engwicht Communications, 2001)

walking, not allowing their children to walk, and not parking in the street.

***Each step of this psychological retreat from the street not only eroded the quality of neighborhood life and sense of community -- it also encouraged the traffic to go even faster. It also left those who must walk or cycle more vulnerable.***

*Street Reclaiming* involves a two-step process.

**Step one** is to *psychologically* reclaim the street and to reverse this process of erosion, gradually moving human activities back towards the street. Trials in Australia and North America have shown over and over again that the return of human activity slows traffic.

**Step two** is to change the psychological feel of a street so it feels more like an ‘outdoor living room’ than a ‘corridor’ or ‘race track’. (Rooms strike a balance between serving a ‘movement’ function and ‘exchange’ or socializing function. They invite users of the space to act as a respectful guest.) There are four basic principles for reclaiming through design.

1. *Create rooms rather than corridors:* The same design principles used to create a great indoor room are used to create a great outdoor room. A grand entrance, interesting floor design, walls that define the room and give a sense of intimacy, a ceiling, and furnishings that are both functional and interesting.

2. *Reduce traffic-oriented devices:* Concrete islands, official signage and road markings create an environment that feels like it is owned by traffic. However, it is possible to convey messages to motorists through ‘human artifacts’ that actually make the space feel more like a room. A red kid’s tricycle on a post is more effective in conveying a message than an official sign ‘Warning, Kids Play Here’.

3. *Create ever-changing streetscapes:* Ever-changing streetscapes will keep speeds lower than static streetscapes by increasing the ‘unpredictability’ and ‘intrigue’ factors. Ever-changing streetscapes also encourage residents to use their street for socializing more, which further reduces speed. To help create ever-changing streetscapes, street-reclaiming devices should be ***unique, changeable*** and ***movable***.

4. *Evolve a unique personality:* Motorists are encouraged to act more like a guest in rooms that exude the personality of residents — and that means giving a certain freedom to residents to decorate their own outdoor living room. One way of doing this (without resorting to written guidelines) is for the city to provide ‘blank canvases’ for the community



to do their street reclaiming on – defining *what* space can be reclaimed but allowing the community to put what they like within that space.

## What a city can do

- Encourage reclaiming through activity
  - Block parties and street-games competitions. (It is important that you do not close the street to traffic for these events. The aim is to establish a new culture which respects and accommodates *both* functions of the street.)
  - Support and resource *Walking School Bus* programs.
  - Promote fitness through walking and cycling.
  - Support and resource residents in becoming *Pace Streets*.
  - Support and resource schools to run the *Red Sneakers School Quest*.
- Create 'blank canvases' for reclaiming
  - *Universal Anchoring Device*. A device embedded in the roadway or sidewalk which allows a wide variety of street reclaiming devices to be quickly attached or changed (banner poles, sculptures, etc.) The city can control where the devices are located. Maximum sizes that can be attached are stamped on the anchoring device.
  - *Street entryway frameworks*. The city may put a pole on either side of the entryway and have two wires connecting them above the street. The upper one to hang 'devices' and the bottom one being the lower limit. They may also put frames on the posts in which the residents can put banners, landscaping or other devices.
  - *Recycling road space*. Where it is appropriate to remove road space, these spaces should be left as a blank canvas rather than being master-designed by the city or by the key activists in the street. The city may provide some 'art materials' with which the community can 'paint their canvas' — loose seats, landscaping on wheels, etc.
- Encourage creation of quality reclaiming devices.
  - Divert funds from fixed physical traffic calming devices.
  - Employ artists to create movable reclaiming devices.
  - Hold competitions for the best reclaiming devices created by residents (awards night, yearly 'best of' book, travelling exhibition).
- Clearing house for movable devices
  - Encourage residents to donate devices to a central store.
  - Neighborhood swap meetings.

- *Pace Street* Home Delivery Vans to carry catalogue of devices and take bookings.

### **What individuals can do**

Reclaiming a street through activities need not cost any time at all.

- Instead of relaxing indoors, sit on the porch.
- Move some indoor activities into the front yard, the sidewalk, or even into the street – reading, drinking coffee, knitting, rocking in a rocking chair, renovating furniture.
- Let children play on the sidewalk but take a chair out and supervise them.
- Walk children to school or to a friend's place.
- When the weather is fine, entertain guests on the sidewalk or in the street.
- Put something unusual in the car parking space in the street. If the space must be used to park a car, put something unusual on the car.
- Invite neighbors to meet for coffee on the sidewalk, parking bay or even the street.

### **What neighborhoods can do**

- Residents agree to all park their cars in the street, starting on a given night. Park the maximum distance allowable from the curb. If needed, protect the first cars by putting a trailer full of landscaping on the corner – or ask the city to help you create a bulb-out.
- Organize an inter-street street games competition — street hockey, hopscotch, etc.
- Have a block party, but one where the street is not closed to traffic.
- Have everyone paint a life size portrait of themselves on ply cutouts that are articulated with bolts at the joints. Each week rearrange the 'dummy residents' into some simulated group activity in the street. Take it in turn — household by household.
- Take it in turns to decorate the entryway to your street. (Space this so everyone only has to do it once or twice a year.) Have your street vote on the most creative arrangement at the end of each round and make the winner the guest of honor at a block party.
- Create a special *Celebration Chair* that is placed outside people's houses where one of the occupants is having a birthday, anniversary or has achieved something special. Put the details on a blackboard beside the chair.
- Start a *Walking School Bus*.

- Erect a community notice board on a street corner. Add chairs to create a meeting place.

## **Possible enhancements**

- *PACE CAR* Streets may be automatically entitled to have *Universal Anchoring Devices* installed in their street, giving them automatic preferential access to Street Reclaiming devices.
- *PACE CAR* Streets that have tried street reclaiming but still have a traffic problem may get preferential assessment for more traditional traffic calming.

## **10.9 Zoning**

Sample zoning information was given to the Northampton Office of Planning and Development on the following topics:

Sidewalk Related

Bike-related, Including a Summary of Pioneer Valley Community Bike Laws

Adequate Public Facilities Ordinance

Traditional Neighborhood District Subdivision Regulations

Street Standards for Inclusion in Subdivision Regulations

Transit-oriented Development: Bus Stop Districts

Bicycle and Pedestrian Accessibility

Mixed Use Development

Mixed use redevelopment

Parking

Site Plan and Design Approval

Sprawl Disincentive



# 11.

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Massachusetts Highway Department. *The Commonwealth of Massachusetts Highway Design Manual, Metric Edition*. Boston, 1997.

US Department of Transportation, *Manual on Uniform Traffic Control Devices*. Millenium Edition. Publication No. MUTCD-1, 2001.

Institute of Transportation Engineers. *Transportation and Traffic Engineering Handbook*. 2<sup>nd</sup> ed. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1982.

### General Transportation sites:

Massachusetts Highway Department: [www.state.ma.us/mhd/](http://www.state.ma.us/mhd/)

Federal Highway Administration: [www.fhwa.dot.gov](http://www.fhwa.dot.gov)

Manual on Uniform Traffic Control Devices:  
[mutcd.fhwa.dot.gov](http://mutcd.fhwa.dot.gov).

Institute of Transportation Engineers (ITE): [www.ite.org](http://www.ite.org)

Types of traffic calming measures: [www.trafficcalming.org](http://www.trafficcalming.org)

### Bike to work specific sites:

[www.bike2work.com](http://www.bike2work.com) The city of Santa Cruz's site.

[www.biketowork.com](http://www.biketowork.com) A general bike to work support site.

[www.pvbikeweek.com](http://www.pvbikeweek.com) Pioneer Valley bike commute week.

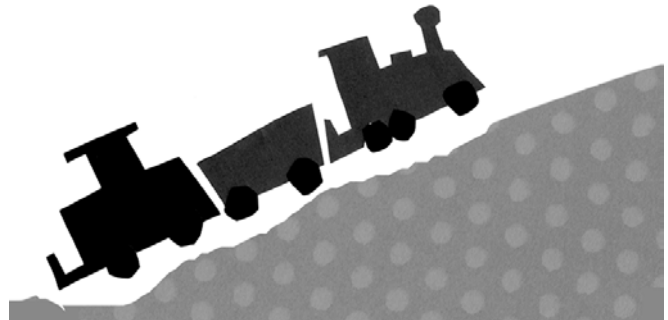
[www.bfw.org](http://www.bfw.org) The Bicycle Federation of Wisconsin. They have information other than just bike commute, but also excellent bike commute information.

[www.bikelink.com](http://www.bikelink.com) State of California bike commute site

[www.biketoworkvictoria.bc.ca](http://www.biketoworkvictoria.bc.ca) Victoria, Canada Bike to Work Week Society

<http://www.massbike.org/pub/commute.htm> MassBike site

<http://www.beachworks.com/nawp/HealthSavings/bikecommute.html> The National Association of Working People (NAWP) is a nonprofit, nonpartisan organization of non-retired persons dedicated to



increasing the quality of life of the American worker through education, advocacy and service—encouraging people to bike!

### **Other Useful Sites**

Alternative Transportation: [www.state.ma.us/doer/programs/trams/trans.htm](http://www.state.ma.us/doer/programs/trams/trans.htm)

Association for Commuter Transportation: <http://tmi.cob.fsu.edu/act/act.htm>

Founded in 1990, the TDM Institute is a charitable foundation established by ACT to conduct research and provide educational opportunities to the membership and the public. The TDM Institute is a joint sponsor of the ACT Annual Conference, as well as special training workshops and professional development seminars.

The Bicycling Blueprint: [www.transalt.org](http://www.transalt.org)

The Bike Plan Source: [www.bikeplan.com](http://www.bikeplan.com)

The BikePlan Source Home Page is our on-going effort to help you improve bicycling conditions in your community. It includes a growing and evolving online bicycle planning and program guide, an extensive reference library, a bit about who we are, news and views, and access to other sites.

Carfree.com: [www.carfree.com](http://www.carfree.com)

<http://carfree.actionize.org>

Carsharing Network: [www.carshare.net](http://www.carshare.net)

Center for Clean Air Policy: [www.ccap.org](http://www.ccap.org)

Commute Cost Calculator: <http://www.rides.org/lv2calc/calc.html>

Commuter options—Washington DC: <http://www.commuterpage.com>

EPA Clean Air funding: <http://www.epa.gov/oms/rfp.htm>

Five Years of Progress: 110 Communities where ISTEA is Making a Difference. DiStefano, Joe and Matt Raimi. Washington, DC: Surface Transportation Policy Project, 1997. Five Years of Progress presents case studies of successful ISTEA (Intermodal Surface Transportation Equity Act) projects to show how the legislation has transformed the transportation process by considering alternative modes of transportation, involving the public in the decision making process, and making communities more livable through improved transportation systems. <http://www.transact.org/5yrs/index.htm>

Impacts of Transportation. Rutland County, VT. This report quantifies the performance of traditional and alternative forms of transportation. <http://216.219.174.249/cgi-bin/websearchprc.pl>

ISTEA Planner's Workbook. Franko, Margaret ed. Washington DC: Surface Transportation Policy Project, 1994. Compiled by some of the top experts on ISTEA (Intermodal Surface Transportation Equity Act), this book serves as a guide for navigating the transportation law and utilizing its components to the fullest potential.

<http://www.transact.org/pw/indexpw.htm>

The League of American Bicyclists: promotes bicycling for fun, fitness and transportation and works through advocacy and education for a bicycle-friendly America. Sells Bike Commute organizer's kit <http://www.bikeleague.org/about/index.html>

"Loop Lanes." Pelletier, Michael. Planning Commissioners Journal. An innovative alternative to the traditional cul-de-sac can provide shared common open space and other benefits to residents. <http://www.plannersweb.com/articles/v-pell.html>

National Biking Safety Network: <http://www.cdc.gov/ncipc/bike/home.htm>

National Center for Bicycling and Walking <http://www.bikefed.org>

National TDM and Telework Clearinghouse: <http://www.nctr.usf.edu>

The Pedestrian Environment (1993) Presents findings of several analyses testing the strength of correlation's between pedestrian design and travel behavior. <http://www.bts.gov/smart/DOCS/tped.html>

Quantifying the benefits of Bicycling—a report from the Victoria Transport Institute [http://www.vtpi.org/0\\_nmt.htm](http://www.vtpi.org/0_nmt.htm)

"Safewalks". Lusk, Anne. Planning Commissioners Journal, Fall 1994. Reclaiming streets for people in crime-prone areas. That's the aim of "safewalks": a practical, but exciting, concept described by one of the nation's leading greenway advocates. <http://www.plannersweb.com/articles/lus076.html>

School-based programs: <http://www.nctr.usf.edu/clearinghouse/schoolpool.htm>

The Surface Transportation Policy project: <http://www.transact.org> The goal of The Surface Transportation Policy Project is to ensure that transportation policy and investments help conserve energy, protect environmental and aesthetic quality, strengthen the economy, promote social equity, and make communities more livable. We emphasize the needs of people, rather than vehicles, in assuring access to jobs, services, and recreational opportunities.

Street Reclaiming etc. Australian organizer, David Engwicht's site: <http://www.lesstraffic.com>

Take Back Your Streets: How to Protect Communities from Asphalt and Traffic. Conservation Law Foundation. Boston, MA: Conservation Law Foundation, 1998. This is an essential guide for any community activist, local policymaker or concerned citizen interested in knowing how to use existing laws and regulations to persuade public highway officials to design and widen streets and bridges in ways that don't harm the natural environment, destroy community character and create unsafe neighborhood speedways. TBYS is comprehensive and detailed, yet written for the non-expert. <http://www.clf.org/pubs/index1.htm>

"Taming the Automobile: How We Can Make Our Streets More Pedestrian Friendly." Untermann, Richard. Planning Commissioners Journal. November/December 1991. Strategies for meeting pedestrians' needs, from the author of Accommodating the Pedestrian: Adapting Towns & Neighborhoods for Walking and Bicycling. <http://www.plannersweb.com/articles/unt002.html>

Tea-21 User's Guide. Transportation Equity Act for the 21st Century. [www.tea21.org/guide/guideonline](http://www.tea21.org/guide/guideonline)

TMA-Pioneer Valley: <http://www-parking.admin.umass.edu/tma>

TMA from Southern New Jersey: <http://www.ridewise.org/about/aboutus.htm>

Transit-Oriented Development (TOD). ASU College of Architecture and Environmental Design, Tempe, AZ: 1999. APA Online National Conference Proceedings 1999. Transit-oriented development (TOD) has become the dominant urban growth planning paradigm in the United States. Yet scant evidence has been



proffered to indicate that it will produce significant environmental and social benefits commensurate with the costs of the major transportation system improvements that it requires. <http://www.asu.edu/caed/proceedings99/NILES/NILES.HTM>

Transportation Tech Sheets. Congress for New Urbanism Transportation Task Force. San Francisco: Congress for New Urbanism, 1999. Intended for a general audience, these Tech Sheets are concise, illustrated, two-page summaries of transportation topics of interest to New Urbanists. Includes sheets on: traffic calming, bus stops, pedestrian sheds, free parking, parking management and vintage trolleys. [http://www.cnu.org/tech\\_sheets/](http://www.cnu.org/tech_sheets/)